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OOD SUPPLIES IN EACE AND WAR

R. HENRY REW

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BY

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PREFATORY NOTE

To my old friend, and sometime colleague, Major Craigie, C.B., I inscribe this book, knowing that in him it will find one sympathetic reader.

My interest in food supply statistics, and in agricultural economics generally, extends over nearly forty years, and it has been my good fortune to have opportunities of continuing, and, in some degree, supplementing the pioneer work in this field, for which Major Craigie's name is known throughout the world. The influence which, mainly on his initiative, the International Statistical Institute exercised in formulating general principles for the collection of statistics of agricultural production has been, in more recent years, reinforced by the specialised and systematic work of the International Agricultural Institute. There still remain many gaps to be filled and many defects to be remedied before statistics of the world's food supplies attain completeness. The war has set new obstacles in the path of statistical progress, and it is impossible at once to

re-establish all the old international relations. The years that have passed since the International Statistical Institute last met, at Vienna in 1913, have left scars which time alone can heal, and some of those who foregathered there have passed away.

An adequate survey of the wide field suggested by the title of this book must await fuller knowledge and more quiet times. Here is an attempt only to indicate the main features and to get the salient facts into right perspective. The treatment of the subject is more insular than I intended at the outset, but it is not easy to look with equal eye on all the nations when our own difficulties loom large and insistent. The aftermath of the war involves a re-orientation of national policy in regard to all economic and social questions, among which the future of the Land—and all that this implies —is prominent. Politics are outside the scope of this book, and it deals with the past as well as the present. For, after all, if the problems of to-day present themselves in a new guise they have their roots in a very old world.

R. H. R.

December 1919.

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FOOD SUPPLIES IN PEACE AND WAR

INTRODUCTION

Of the three elementary needs of man—food, shelter and clothing—food is not only the most vital, but also the most universal and constant. Dwellings and clothes may be, in some climates and under some conditions, temporarily or even permanently dispensed with, but a regular supply of food is the prime necessity of life. Man may rely, like the "black fellow" of the Australian bush, on nature, and make little more provision for his sustenance from day to day than the animals, or he may depend, like the inhabitants of crowded cities, for every meal on a complicated and widespread organisation; but in any case food he must have or die.

It follows from this elementary fact, that food has been in all ages a munition of war, as well as a commodity of peace. Instruments of slaughter have been developed by man's ingenuity. Slings, catapults, bows and arrows, spears, swords, muskets, cannon, torpedoes, bombs, poison gas—all the devilish paraphernalia for the destruction of human life—have been evolved with the progress of invention and science, but starvation remains the simplest and most deadly of all the means by which war may be waged. The history of warfare is full of instances of the use of beleaguerment or blockade as a military operation—whether of an isolated stockade or fort in the wilderness; of a city, as in the case of Paris in 1870, or of a nation as in the case of the United Kingdom or Germany in the recent war. The operation may have been successful or unsuccessful, but its legitimacy has never been questioned. The fact that the Germans, while using their utmost efforts to employ the weapon of starvation against their enemies, protested vehemently that it was a violation of the laws of warfare

when employed against themselves, is only an instance of that strange Teutonic mentality, the revelation of which so puzzled the civilised world.

The invention of mechanical motive power, and the consequent development of regular and rapid means of transport throughout the world, have de-localised food supplies. No longer is any nation doomed to starvation because its harvests fail or pestilence destroys its flocks and herds. All the ends of the earth can contribute to feed those who are in need. The distribution of food is determined not by physical but by economic forces, and so long as the machinery of transportation by land and sea is unhampered, the risk of famine is shared by the whole community of nations.

In considering the question of food supplies in peace and war, we confine ourselves, therefore, to the period, which is not after all more than about forty years, in which the means of transporting all kinds of food have been so developed that any commodity, however "perishable," may be conveyed

from the place of production to the place of consumption, regardless of distance. There are still some exceptions, but broadly speaking, all the main articles of food can be, and have been, conveyed in a marketable condition from one end of the earth to the other.

Food is the product of Agriculture, and Agriculture embodies and typifies peace. The husbandman is not easily disturbed by war's alarms, and his intimate association with the placid and inevitable processes of Nature, engenders a calmness of spirit which is unshaken by catastrophe. Many stories, illustrative of this attitude of mind, were told of the French and Flemish peasants. Even within the range of the guns, and up to the line of trenches, they pressed the plough, resolved that the madness of mankind should not interrupt the sane and ordered cultivation of the soil. So sure a sense of values, so complete an absorption in the things that matter, are possible only to the tiller of the soil. The quarrels of man are transient, the processes of Nature are eternal.

"The East bowed low before the blast
In patient deep disdain;
She let the legions thunder past,
And plunged in thought again."

The devastating fury of war may pass over the land, and the scars it leaves may long remain, but Nature keeps her calm procession of seed-time and harvest, summer and winter; man returns, like a babe to the breast, to the bosom of Mother Earth, who brings forth her fruits in due season.

But if Nature remains serenely unchangeable, mankind has changed. A new world is being fashioned from the wreck of the old, and a questioning spirit challenges the ancient customs and traditions. Nowhere do these customs and traditions hold stronger sway than among the cultivators of the soil.

"The chief of Saints is him you name
Old Use-and-Wont, which was and is,
And is to come, always the same."

Use and wont, however, will not suffice in the days which have now come upon the earth. The old ways are trodden by the feet of those who fought for freedom in many

lands and have come back with a new outlook on life, while those who have not wandered from their native fields have, nevertheless, felt the perturbation of a great emotion. The old men have dreamed dreams and the young men have seen visions.

The Black Death has been called the watershed of English economic history; the Great War is the watershed of the world's economic history. In these pages an attempt is made to present an outline of the facts relating to that side of the economic upheaval which affects the supply of food.

I.—BEFORE THE WAR

CHAPTER I

THE WORLD'S SUPPLY AND DEMAND

"*Subsistence is, in the nature of things, prior to conveniency and luxury.*"—ADAM SMITH.

FOR two or three decades before the war the predominant economic fact was the cheapness of the main necessaries of life, and the steadiness of prices in the world's markets, year after year, of the chief articles of food. This is readily shown by any table of index numbers of the prices of commodities. Saeurbeck's well-known index number for food in 1884 was 79, and fell to 70 in 1887. It rose to 77 in 1891, and then fell rapidly to its lowest point, 62, in 1896. It did not reach 70 again until 1907, but had risen to 75 in 1911, touched 81 in 1912, and stood at 77 in 1913. During the whole period the change between one year and another was never

more than six points, and the extreme variation during thirty years was nineteen points. These records apply to prices of food in this country, but inasmuch as the English market is the largest and most regular in the world for food supplies of all kinds, they substantially represent the course of the world's prices.

This stability of food prices is a remarkable fact. Price represents the point at which effective demand and available supply meet, and it may rise or fall by a change in the one or the other. But in the case of the prime articles of food, price in a prosperous community is especially the barometer of supply. Demand *per capita* is very constant, and a 10 or 20 per cent. change in the general price level has only a slight effect on the total quantities consumed. The returns of food imports, and such information as is available of consumption, corroborate this. It appears, therefore, that the world's demand for food, steadily increasing by the regular growth of population, was, for a quarter of a century or more,

almost exactly met, year after year, by the world's supplies.

It is easy to overlook the significance of this fact. The response of supply to demand appears only natural and inevitable. We regard it as an automatic process. But the main food crops take a year, or, under favourable conditions, six months, to grow; cattle and sheep take two or three years to mature; the producer, when he decides to risk his capital and labour, must consciously or unconsciously calculate a long way ahead the probable state of the world's markets, which depends largely on the effect of similar calculations made by competing producers in other parts of the globe. And when he has calculated and toiled, Nature intervenes, doubles or halves his expected crops, or decimates his herds and flocks. It may therefore be said that the maintenance of so even a balance between the world's supplies and the world's demands is remarkable.

In this connection, it may be noted that as in any single country all the food crops of the year may fail—as they practically did

in this country no longer ago than 1879, and in many previous "famine" years which English history records—so there is ever the possibility that all the crops in the world may fail in the same year. That event is improbable, but it cannot be said that the risk is negligible.

The world's supplies of food, therefore, depend partly on the efforts of man, and partly on the kindliness of Nature; their distribution depends entirely on the enterprise of man. The organisation which brought, with unfailing regularity, from diverse and remote corners of the globe, the daily meal of the humblest consumer, was a triumph of human endeavour. The intricacy of the machinery which worked with such smoothness was apparent when the operations of war interfered with it. Apart from direct enemy action, a dislocation of the machine was caused immediately ships had to be withdrawn from the regular trade routes, and the delicacy of the adjustment of the several parts was demonstrated when the heavy hand of the State had to be intro-

duced, in substitution for the lighter and more flexible fingers of those who were previously responsible.

In the world's exchange of commodities, wheat takes a foremost place, both in importance and bulk. The selling countries were few. Taking them as they ranked on the basis of their exports of wheat and flour, in the five years before the war (the figures representing the average yearly quantity in thousands of tons exported in 1909–13), they were :—

	Wheat.	Flour.	Total (as wheat).
Russia . . .	4,171	117	4,333
United States . .	1,428	914	2,697
Argentina . . .	2,386	119	2,551
Canada . . .	1,988	303	2,409
Roumania . . .	1,311	74	1,414
India	1,300	53	1,374
Australia . . .	1,125	129	1,304

There were one or two other minor sources of supply, such as North Africa.

The buying countries were rather more numerous. The list of them, with their

average imports in thousands of tons in 1909–13, being :—

	Wheat.	Flour.	Total (as wheat).
United Kingdom .	5,164	532	5,905
Germany . . .	2,383	15	2,404
Holland . . .	1,791	190	2,055
Belgium . . .	1,977	3	1,981
Italy . . .	1,528	2	1,531
France . . .	1,022	10	1,036
Brazil . . .	340	162	565
Switzerland . .	443	—	443
Sweden . . .	181	7	191
Greece . . .	182	1	183
Denmark . . .	109	51	180
Spain . . .	120	—	120

Egypt and China imported considerable quantities of flour. Belgium and Holland rank as importing countries; but both, in fact, exported large quantities of wheat, so that the figures of their purchases do not represent their own requirements.

In dealing with the food supplies of the world, we are concerned mainly with crops and produce in which there is international trade, and in this connection wheat is predominant. But it is not the sole, perhaps

not the chief, crop which furnishes the "staff of life" to the world's inhabitants. Even in Europe, there are probably more persons whose daily bread is made from rye, than there are who eat a wheaten loaf. Rice is the main "bread-stuff" of Asia, as maize is of South Africa, while maize also forms a considerable part of the dietary of America. India supplies nearly the whole of the world's demand for rice, her exports in 1909–13 being 2,350,000 tons per annum. There was a large international trade in maize, mainly for stock-feeding: Argentina, the United States, Roumania and Russia being the chief sellers, and the United Kingdom, Germany, Holland, Belgium, France, Austria-Hungary, Italy and Denmark the chief buyers.

Of meat, including the flesh of swine as well as of cattle and sheep, the chief sellers were the United States, Argentina, New Zealand, Denmark, Australia, Uruguay and Holland, and about nine-tenths of the whole supply came to the United Kingdom.

Sugar, cheese, butter, and certain kinds

of fruit, vegetables and nuts, are largely the subject of international trade, but the details need not for the present detain us.

The capacity of a nation for contributing to the general stock is dependent on its own production and consumption. Obviously it exports only the surplus which remains after supplying the requirements of its own people, and the continuance of its exports depends upon the rate at which its agricultural output keeps pace with, or lags behind, its increasing population. The increase in the population of the earth as a whole, and in practically every nation on it (with the exception of China, which is a mystery in regard to vital statistics, and some of the older nations, such as the North American Indians), is, as Sir William Crookes[1] forcibly pointed out, the menacing factor in the problem of the world's food supplies in the future. The Great War, directly and indirectly, checked for a time the increase of population in Europe, but with a world population of, say, 1,650,000,000,

[1] *The Wheat Problem.* Longmans, 1917.

even the decimation of Europe would only temporarily affect the secular increase of mankind. The pressure on the means of subsistence may for a time be relaxed, but it will inevitably be resumed, and although the time predicted by Sir William Crookes, when the world may be faced with an insufficiency of food, is much more distant than he feared, and may, indeed, never come, the relation of production to population is, nevertheless, the vital issue to be faced in any discussion of food supplies.

It is needless to say that any attempt to relate the world's production of food to the world's population is extremely difficult. The statistical data are in some cases entirely lacking, and in others of questionable accuracy. A census of population is now taken in most countries every ten years, and fortunately they mostly synchronise, having been last taken either in 1910 or 1911. The influence of the International Statistical Institute, and later also of the International Agricultural Institute, has not only stimulated the collection of official agricultural

statistics, but has also done much to co-ordinate them.

The wheat area in a number of countries in 1911 and in 1901, when compared with the census returns of the two dates, gives some indication of the extent to which production kept pace with population during the decade. Comparable figures for this period are available for the British Empire (comprising for this purpose the United Kingdom, Australia, Canada, India and New Zealand), for eleven European countries (other than the United Kingdom), and for six other countries, viz. Algiers, Argentina, Japan, Russia in Asia, the United States and Uruguay. Briefly summarised the comparison is as shown on opposite page.

These figures show that during the first decade of the century wheat-growing was extended by about 46,000,000 acres, while the population of the same countries increased by 93,000,000, and the number of acres of wheat per 1,000 persons increased from 280 to 310. The quantity of wheat represented by an acre varies widely, and is, generally

	Wheat Area (thousands of acres).			Population (thousands).		
	1901.	1911.	Increase per cent.	1901.	1911.	Increase per cent.
British Empire . .	34,696	50,490	45·5	283,385	302,154	6·6
Europe	98,326	115,105	17·1	291,685	337,181	15·6
Other countries . .	67,908	81,408	19·9	139,927	168,818	20·6
Total . .	200,930	247,003	22·9	714,997	808,153	13·0

speaking, in inverse ratio to the area under cultivation in each country. Thus in Belgium, with some 400,000 acres, the average yield per acre was about 37 bushels, and in the United Kingdom, with less than 2,000,000 acres, 33 bushels; while in European Russia, with 60,000,000 acres, it was $9\frac{1}{2}$; and in India, with 28,000,000 acres, $11\frac{1}{2}$ bushels.

An attempt to make a similar comparison of the position of the world's resources of meat, gave conflicting and less satisfactory results. Within the British Empire the numbers of cattle, sheep and pigs, showed no general increase in relation to population, except in South Africa, where cattle and sheep markedly increased. In Europe, Denmark increased her stock of cattle, but in most countries neither the herds nor the flocks had increased with the growth of population, the tendency being in the opposite direction. In most other countries the figures for this period were too untrustworthy to afford any guide.[1]

[1] Further details as regards both crops and stock may be found in *Agricultural Statistics*, Part V., for 1911 and 1912, issued by the Board of Agriculture and Fisheries.

Without relying overmuch on the dubious evidence of international statistics, from which safe inferences can be drawn only when the many traps for the unwary which they contain are fully appreciated, it may be said that up to the outbreak of war there was no cause for anxiety as to the adequacy of the world's supply of food to meet the demand for any period which seriously concerned the present generation. The exploitation of new lands, brought within reach by the development of transport, was rapidly proceeding, and vast areas of immense potentiality were being harnessed to the service of mankind. With all the resources of civilisation man must, in a sense, ever live from hand to mouth, trusting from year to year that the ancient promise will not fail. But apart from this, his subsistence was assured, and the spectre of famine was only to be feared if it were invoked by the deliberate action of his fellow-creatures.

CHAPTER II

THE FOOD SUPPLY OF THE UNITED KINGDOM

"*England has learnt lessons in agriculture from many countries . . . but on the whole she has taught more than she has learnt.*"—ALFRED MARSHALL.

THE increasing dependence of the United Kingdom on imported food supplies was for many years before the war a familiar theme. It was attributed to the combination of two causes: a greater demand by reason of the growth of population, and a lesser production of home-grown food. The first is an evident fact. The population of the United Kingdom increased from 21,000,000 in 1821, to 31,000,000 in 1871, and 45,000,000 in 1911. At the same time the average standard of living steadily rose, and the consumption of food per head, if it did not greatly increase in bulk, certainly became more varied, and the demand more fastidious. The common

assumption that the home production of food seriously diminished, particularly during the past forty or fifty years, is not so well-founded. It may be the fact, but there is no sufficient evidence of it.

There is no question that the total quantity of food produced in Ireland has increased since the "seventies" or "eighties," so that any reduction which took place must have been in Great Britain. That there was a substantial reduction in the extent of arable land in Great Britain amounting between 1871 and 1911 to nearly 4,000,000 acres, and that the acreage of wheat during the same period declined by 1,700,000 acres, are well-known facts. But the total extent of cultivated, *i. e.* farmed, land was maintained, and although there was a substantial loss in food productivity on land turned from arable to grass, on the other hand there was a great increase of market gardening, and of intensive cultivation of the land still kept under the plough. In live stock there had been, on the whole, a substantial increase. Sheep are a fluctuating quantity,

and went up and down by several millions during the forty years, but the number at the end of the period was practically the same as at the beginning, while the head of cattle had increased by 1,750,000. Both cattle and sheep were brought much earlier to maturity, so that the meat production represented by animals annually enumerated had substantially increased. This factor of increased production per unit, whether per acre or per animal, is sometimes overlooked, and leads to false deductions from the figures. Milk is a salient instance. Although the number of milk-producing animals—cows and heifers—has substantially increased, it is true that while in 1881 there were in the United Kingdom 105 cows and heifers for every 1,000 persons, in 1911 there were only 97. But to draw from these figures the conclusion that the milk supply had diminished, would not be warranted. The population increased by 14,000,000, there were no imports, and it is notorious that large sections of the community drank far more milk per head than they did forty years previously. The ex-

planation lies in the greatly increased output per cow. Cows were bred, kept and fed for milk production much more generally and effectively, and supply steadily increased to meet the increased demand.

When British farmers are accused of lack of enterprise or adaptability, the milk supply before the war provides them with a fair rejoinder. There were, no doubt, defects of quality, condition, and distribution, but they were due as much to the indifference of the consumer as to the ignorance or cupidity of the producer. Milk varies in quality, and its quality can be improved by the use of better-bred animals and by higher feeding—both of which involve extra cost. But the public refused to pay a higher price for a better article. The only thing the consumer cared about was the price, and British farmers are entitled to claim that the one product in universal demand, of which they possessed an absolute monopoly, was probably the cheapest—in relation to its food value—in the market.

Two or three years before the war com-

plete returns of the food production of this country were for the first time obtained. Certain additional information on some points has been collected during the war, but the inquiry made by the Board of Agriculture in connection with the Census of Production in 1908[1] still affords the basis for calculation. A Committee of the Royal Society carefully examined the data in 1916, and elaborated them by working out the food values of each food product, and doing the same for imported produce. The report of this Committee, issued as a Parliamentary Paper,[2] should be referred to by those who wish to know, as accurately as possible, the position in which this country stood as regards its consumption of food at the outbreak of the war. It effectually disposed of a popular misconception—which even yet occasionally appears—as to the proportion of the nation's food supply which is produced at home. In 1912, using for the first time the material supplied in the Return of Agricultural Output,

[1] The Agricultural Output of Great Britain (Cd. 6277).
[2] Cd. 8421.

I suggested that, excluding sugar and beverages such as tea, coffee and cocoa, rather more than half the total food requirements of the United Kingdom was produced at home, The Committee of the Royal Society, on the same basis, and for practically the same period, calculated the gross weight and food value of home-grown and imported food products as shown in the summary on the following page.

From this calculation it appears that, omitting sugar, home-grown produce amounted in crude weight to nearly two-thirds (64 per cent.) of the total supply. When to these figures are added an estimate for cottage and farm produce, for which the weight is not given, and the total supply is converted into calories, it appears that home produce supplied about 48 per cent. in food value of the total consumption. The Committee, however, also estimated that the nation consumed 15 per cent. more than was necessary for full sustenance, and, if this were the case, we were importing in excess of our needs, and the home supply was relatively greater than

	Weight in metric tons.			Work-producing power in millions of Calories.		
	Home-grown.	Imported.	Total.	Home-grown.	Imported.	Total.
Cereals	1,010,000	3,855,000	4,865,000	3,705,000	14,007,000	17,712,000
Meat	1,615,000	1,070,000	2,685,000	5,369,000	3,521,000	8,890,000
Poultry, eggs, game and rabbits	170,000	161,000	331,000	235,000	226,000	461,000
Fish	715,500	132,900	848,400	392,000	139,000	531,000
Dairy produce (including lard and margarine)	4,704,000	527,800	5,231,800	4,715,000	3,538,000	8,253,000
Fruit	341,000	930,000	1,271,000	168,000	909,000	1,077,000
Potatoes and other vegetables	4,788,000	694,000	5,482,000	4,054,000	758,000	4,812,000
Sugar (including cocoa and chocolate)	—	1,657,000	1,657,000	—	6,633,000	6,633,000
Cottage and farm produce, not included above	—	—	—	2,655,000	—	2,655,000

is indicated by the figures. It should, however, be added, without examining the calculations in detail, that there is some reason to doubt the accuracy of this apparent excess of consumption. It rests upon a calculation that the theoretical requirements of an average man doing an average day's work are 3,400 calories per day, which is not universally accepted, and, in any case, is based on a somewhat slender foundation of exact observation.

That the nation before the war was amply supplied with food is a fact, however, which does not rest alone on statistical and physiological evidence. At no time and in no country was food so plentiful, varied and cheap. The world competed to keep the larder of John Bull fully stocked with all the necessaries and luxuries of life. In 1913, the main sources of supply outside the United Kingdom — arranging them roughly in order of the value of shipments of foodstuffs—were: the United States, Argentina, Denmark, Canada, India, Australia, Russia, Netherlands, Germany, New Zealand, Austria-

Hungary, France, Spain, Ceylon. The countries from whence mainly came the chief articles of general consumption were:—

Wheat: United States, Canada, India, Argentina, Australia, Russia.

Beef and Mutton: Argentina, Australia, New Zealand, Uruguay.

Bacon, Hams and Pork: United States, Denmark, Netherlands, Canada.

Rice: India.

Sugar: Germany, Austria, Cuba, Netherlands, Belgium.

Butter and Margarine: Denmark, Netherlands, Russia, Australia, Sweden, France, New Zealand.

Cheese: Canada, New Zealand, Netherlands.

Fruit: Spain, United States, France, Canada, Canary Islands, Costa Rica, Colombia.

Tea: India, Ceylon, Java, China.

Cocoa: British West Africa, British West Indies, Netherlands, Brazil, Switzerland.

Coffee: Brazil, Costa Rica, Colombia, Guatemala, India, Mexico.

This catalogue includes only the principal sources of supply for each commodity, and other countries also contributed in smaller quantities.

It is not to be wondered at that an import trade of such extent and magnitude—its annual value on arrival at these shores exceeding

£200,000,000—should loom large in the eye of the public, and that whatever statisticians might say, the nation's dependence for food on overseas supplies should be regarded as the pregnant and predominant factor in our national existence :—

"For the bread that you eat and the biscuits you nibble,
The sweets that you suck and the joints that you carve,
They are brought to you daily by All Us Big Steamers,
And if any one hinders our coming you'll starve!"

This might not be literally true, and it has since been proved that very great hindrance may occur before we are brought to actual starvation. But it expressed the popular belief, and when war broke out even our firm trust in the Navy did not altogether prevent a moment of panic.

II.—WAR TIME

CHAPTER I

THE EFFECT ON WORLD'S SUPPLIES

"The shatter'd links of the world's broken chain."
BYRON.

ALTHOUGH certain pious people believed in the coming, at some indefinite and ever-receding date, of Armageddon, and although, certain prescient people were convinced, by sinister signs, that a megalomaniac monarch intended to crown his career by an attempt to seize the dominion of the Earth, the great mass of work-a-day folk refused to believe seriously that at this stage of civilisation the madness of a great war was possible. All nations, except those who planned the crime, were unprepared. In the sphere of military and naval action some provision for defence against aggression had been made, and that

the preparations were at the outset entirely inadequate, was due to the universal failure to foresee the nature of the struggle which had to be provided for. In the economic sphere no preparation had been made. The storm burst upon the world of business—which is the world in which nine-tenths of every community live, move and have their being—with stupefying force. If Governments had failed to visualise the situation, the commercial community were infinitely more blind. There is a bitter sense of humour in recalling the first weeks of the war, when we prated of "business as usual," and many of the eager spirits who sprang to obey the call chafed during their training in fear that they might not be out in time for the finish.

The first blow fell upon shipping. The mercantile marine of Germany, representing about 11 per cent. of the world's tonnage, disappeared, and heavy drafts were made upon the remaining ships for the transport of troops and stores, and for the "lawful occasions" of the White Ensign. Great liners, whose names were household

words, were withdrawn from public use; all the trade routes were denuded; ocean services which had been during the memory of man as regular as the Holyhead to Dublin packet were interrupted, and even the fishing fleets were raided. In the belligerent countries land transport was similarly reduced and crippled. As an army marches and fights on its belly, so commerce lives on transport, and the measure of international trade is the measure of the facilities for the movement of commodities. The complete stoppage of the oversea trade of Central Europe, and the rapid reduction of the exporting capacity of the belligerent countries whose ports were open, modified for a time the effect of the sudden reduction of the mercantile marine, but before long the ever-increasing demands of the fighting forces, and the development of the submarine attack, so reduced the world's tonnage available for commercial use, as practically to stop all international trade, except in food and material for carrying on the war. The war, in fact, not only became the "national industry" of each of the Allies,

but almost the whole of the world's commercial and industrial organisation was enlisted for its requirements.

International trade in foodstuffs was, in the first instance, mainly affected by the loss of the sugar supplies of Germany and Austria, and in a lesser degree by the interference with supplies of butter and eggs from Russia. A still heavier blow was struck when Turkey entered the war, and the closing of the Dardanelles blockaded the Russian and Balkan grain supplies. On the other hand, the demand on the world's food supplies was reduced by the elimination of Central Europe from the oversea markets, in which Germany had been a heavy buyer.

The outbreak of war was timed, no doubt deliberately, for the period when the harvest in Central Europe was practically all ingathered. Whether or no a "lightning" campaign, to be crowned with victory in a few months, was, as is probable, confidently expected, the German Government, with the whole of the crops of wheat, rye and potatoes in hand, could look forward without

serious anxiety, even if the war lasted until the following autumn. Comparatively slight economies in consumption would enable them to keep the country well fed on its own resources, while, especially after the closing of the Dardanelles, they counted with some certainty on drawing supplies, if necessary, from Roumania and Bulgaria. The idea which found so much popular favour in the early stages of the war, that Germany could be reduced to submission by starvation, was chimerical. It was probably originated and fostered by German agents, in the hope that the Allies would limit their military preparations, and rely upon the easier and less costly method of the blockade, which the German Government well knew could never win the war. The same propaganda was pursued even beyond the signing of the Armistice, although in its later stages its object was to convince the world and the German people that Germany was not defeated by force of arms, and that the German army retired from the struggle unconquered and unconquerable. Germany was short of food

in the later years of the war, mainly owing to the exhaustion of her soil, and had to endure privation and hardship, but not to a greater degree than some of the nations who were the victims of her crimes. The real difference was that she exploited the suffering which she brought upon her people to serve the ends of her policy, and to invoke the facile sympathy of that large section of mankind who give their alms to the most plausible and importunate beggar.

The wheat crop in the United States in 1914 was fortunately good, and although in Canada it was short, the total supply from North America was well above the average. Everything depended, however, on the crops of Argentina and India. In India a notable effort was made to increase the wheat acreage, and no less than 4,000,000 acres were added. In the following spring India produced one of the largest wheat crops she had ever grown, although the actual shipment of the surplus presented special difficulties. In Argentina, although the acreage was not increased, the crop was exceptionally large, but

Australia had one of the smallest crops on record, and was, in fact, an importing country for that season.

The war lasted for just over four "cereal" or harvest years, as they are commonly reckoned, and the first—September–August 1914–15—was the most critical as regards the world's wheat supplies. Only the bumper crops in India and Argentina, which were not available until the spring, saved the situation after the Russian supplies were cut off in February 1915. Owing to the unusual lateness of the harvest of 1915 in North America, the supplies had to suffice for thirteen months, but even then there was a substantial quantity available for export, but not shipped before August 1915, which counted as a "carry-over" for the following year. Thereafter there was no deficiency of supplies in sight, although, owing to increasing difficulty of finding the necessary tonnage, large quantities could not be brought to market. The fact was, that wheat-growers responded alertly to the demand. India, being the first

country after the outbreak of war to have a sowing time, at once, as has been noted, increased her acreage, and both the United States and Canada did the same, although their crops could not be available until the next "cereal" year. In North America about 12,000,000 acres more wheat were sown at the first seed-time after war was declared. Australia, which was the most unfavourably situated, as regards both time and distance, increased her wheat area in 1915 by 3,000,000 acres, or about 30 per cent. Altogether, therefore, it may be said that during the first year of the war, the area of wheat in the world was extended by over 18,000,000 acres. The exceptional crops of 1915–16 brought a natural reaction, and the breadth of wheat sown somewhat decreased in later years, owing to the menace to the wheat-grower of the accumulated surplus, especially in Australia.

Some stimulus was given to meat production, particularly in Brazil and South Africa, but as the export of meat from countries south of the equator is dependent

entirely on the number of vessels with refrigerating fittings, as the available supply of such vessels was known to be limited, and its increase practically impossible, the risks of marketing additional numbers of cattle and sheep when they had been bred and reared were obviously deterrent. The possibilities of increased supplies when more favourable conditions return were fully explored, but the probability of their realisation belongs to the post-war period. After America had come into the war, an energetic attempt was made in the United States to supply the deficiency of the Allies in bacon and pig-products, which for a time disturbed the great swine-feeding and packing industry of that country. This, however, belongs rather to the category of the difficulties of belligerents, than to that of the general world interests, as affected by the war. It became impossible, in fact, to dissociate the two during the last two years of the war. Apart from the fact that some States eventually became belligerents, more or less actively, and the "neutral" world almost disappeared,

the commercial and agricultural interests of the nations, whether officially engaged in the struggle or not, were so interwoven that any real discrimination of their economic position is impossible.

CHAPTER II

FOOD PRODUCTION IN THE UNITED KINGDOM

"*The game is more than the player of the game,*
And the ship is more than the crew."—KIPLING.

THE crops in the United Kingdom, which were being harvested, or on the point of in-gathering, at the outbreak of the war, were, on the whole, above the average of recent years, and the agricultural situation was favourable. The annual return of the harvest showed the following results for each of the corn crops and for potatoes, and the average production of the preceding ten years is given in each case for comparison:—

		1914	1904–13
Wheat	quarters	7,804,000	7,094,000
Barley	,,	8,066,000	7,965,000
Oats	,,	20,664,000	21,564,000
Potatoes	tons	7,476,000	6,592,000

The crop of beans was slightly above, and that of peas considerably less than average.

The root crop was below average, turnips and swedes being about 2,700,000 tons, and mangolds about 400,000 tons short. The hay crop was also 1,700,000 tons below average, but there was a considerable quantity of old hay left from the heavy crop of 1913.

The numbers of live stock in the country, as returned in the previous June, were as follows :—

	1914	1904–13
Cattle	12,185,000	11,756,000
Sheep	27,964,000	29,882,000
Pigs	3,953,000	3,805,000

It may be added that the number of horses on farms was 200,000 below average, but important as these were to the Army, no one then thought of them as potential meat supply. The availability of oats and barley as potential breadstuffs was, however, speedily pointed out, and their use in the loaf seriously discussed in view of the uncertain prospects of wheat supplies during the next twelve months. There was, however, no immediate need for drastic action. The military situation was so desperately critical,

that any outward sign of anxiety about our vital food supplies would have given encouragement to our enemies at a time when it was highly important to do nothing to increase their confidence in their speedy triumph. Prices of farm produce during that autumn showed little sign of abnormality. Wheat rose about 10 per cent., barley remained stationary, cattle rose about 3 per cent. by November, but sheep and calves showed no rise until December. Poultry were plentiful and cheap, but eggs rose substantially, and butter slightly. During the first three months of the war, the imports of wheat and flour were considerably heavier then in the corresponding period of the previous year.

Reference has previously been made to the general position of home production in relation to consumption. The extent to which we could, at the outbreak of war, rely on our own resources for the main articles of food, may be seen from the following statement of the approximate percentage of home supplies to total requirements in each case:—

	Per cent.
Wheat and flour	19
Meat (including pig meat)	60
Poultry	80
Eggs	65
Butter (including margarine)	40
Cheese	20
Milk (including condensed)	95
Fruit	30
Vegetables	90

The manner in which British farmers met the situation during the first year of the war, when they were unhelped and unhampered in the management of their business by any direct action of the State, is of some historical interest, and I venture, therefore, to reproduce the substance of a description of the agricultural position during that period, which I gave in September 1915,[1] when the facts were freshly in mind.

The nation began to take a keen interest in the agricultural resources of the country, and farming became the object of general solicitude. It was freely pointed out, with undeniable truth, that our agricultural system had not been arranged to suit the conditions

[1] Presidential Address to Section M of the British Association.

of a European war, and many suggestions were made to meet the emergency. Some of these suggestions involved intervention by legislative or administrative action. It was decided, however, that any attempt violently to divert the course of farming from its natural channels would probably not result in an increase of total production. An Agricultural Consultative Committee, of a very representative character, was appointed by the President of the Board of Agriculture on August 10, 1914. It issued some excellent and timely advice to farmers as to their general line of policy, and this was supplemented by the Board of Agriculture itself. Thirty special leaflets containing suggestions and admonitions were issued in a few weeks, but while all the official recommendations were suitable and reasonable, it would be rash to assume that farmers universally adopted them. They did not at that time accept official guidance or direction with enthusiasm.

> Unkempt about those hedges blows
> An English unofficial rose,

and official plants were not then wont to flourish very kindly in the fields of this country. Patriotism, however, suggested the need for an effort to obtain the utmost possible production from the land, and self-interest also pointed in the same direction. During the autumn the lure of self-interest was not very apparent, but at the end of the year prices began to rise rapidly. The price of English wheat stood 25 per cent. higher than the July level in December, 45 per cent. in January, and 80 per cent. in May. Imported wheat rose even higher, No. 2 Manitoba being in May 95 per cent. above the July level. Cattle and sheep had risen in March by 20 per cent., and in May and June cattle had risen by 40 per cent. Butter rose by about 20 per cent., and cheese by about 40 per cent. Milk rose little during the winter, but when summer contracts were made the winter price was generally maintained.

There are three main types of farming: corn-growing, grazing and dairying. They intermix indefinitely, and there are large interests such as fruit-growing, market-gardening,

etc., which are not included in this classification, but, broadly speaking, the tripartite division—corn, meat, milk—includes the large majority of farms, and one or other of these represents the dominant interest of the farmer. During the first year of the war, the corn-growing farmer did well, the meat-producing farmer moderately well, and the dairy farmer indifferently.

While the markets were going in his favour, the farmer's difficulties began. Feeding-stuffs rose substantially in price. The supply of potash, which came entirely from Germany, was, of course, stopped, and other fertilisers became dearer. The calling up of the Territorial battalions, and the ready response of the countryside to the appeal for the new armies, resulted in the withdrawing of 15 per cent. of the pick of the agricultural labourers by the end of January. A rise in wages followed, and the gross additional payment to labour by farmers during the twelve months was calculated at about £2,000,000.

At the end of the cereal year the results

of the agricultural effort were seen in an increase of the wheat acreage by 22 per cent., and of the oats acreage by 7 per cent., while the area under potatoes had been kept up to the high and sufficient level of the previous year. The stock of cattle was increased in Great Britain, but slightly decreased in Ireland, so that the total for the United Kingdom was about the same as in 1914, *i. e.* the highest on record. Sheep were increased by about 300,000.

The second year of the war saw the difficulties of farmers, especially in regard to labour and feeding-stuffs, increase considerably, but, on the other hand, the prices of all kinds of farm produce continued to rise. But for the persistent belief in some quarters that 1916 would see the end of the war, there was every inducement to farmers, in their own interests, to increase production still further. Their failure to do more may be attributed mainly to the shortage of labour, but largely also to their reluctance to break up grass land, and incur the heavy liability of doing so, under what

appeared to be the uncertainty of the immediate future, and the possibility that before even one crop from the new arable land could be harvested, war conditions might be over, and prices might come down with a run.

The third year of the war opened with the agricultural position steadily getting worse. The Government, however, began to take direct measures for the control of foodstuffs, and the cereal year 1916–17 had hardly commenced when the trade in imported wheat, and soon afterwards the whole trade in grain, was taken out of the hands of private traders and undertaken by the Wheat Commission. This in itself was obviously not encouraging to British corn-growers, who naturally feared the effect on their business when their competitor in the market was the Government, which might, or might not, sell at a profit, and which in any case, by requisitioning vessels, could bring grain to the country more cheaply than private individuals. A little later, however, though somewhat tardily from the

farmers' point of view, as the main wheat-sowing season had passed, the Government took direct action to stimulate home production by offering a guarantee of prices, by ordering, under the powers of the Defence of the Realm Act, an extensive breaking up of grass land, and by undertaking the supply of labour, both manual and mechanical, to supply the gaps left on the land by conscription. These efforts to increase food production were, however, accompanied by a series of orders, commencing in November 1916, which eventually fixed maximum prices for all the produce which farmers had to sell. However carefully prices may be fixed—and they were, in fact, adjusted with anxious consideration for the producers' interests—the simple fact that the State assumes the power of settling the market value of any commodity, must inevitably tend to check the enterprise of the producers of that commodity.

The net results of the various influences which affected agricultural production are shown by the returns of acreage of crops

and of live stock in each year. It must be remembered that the figures represent the state of affairs in June, so that those for 1914 show the position two months before the outbreak of war, and those for 1918 the position five months before the Armistice was signed. The figures are for the United Kingdom as a whole, and for thousands of acres:—

	1914	1915	1916	1917	1918
Arable land	19,414	19,347	19,499	19,748	21,221
Wheat	1,906	2,335	2,054	2,106	2,796
Barley	1,873	1,524	1,653	1,797	1,840
Oats	3,899	4,182	4,171	4,789	5,641
Rye	67	60	66	69	116
Total Corn	7,745	8,101	7,944	8,761	10,393
Beans	301	273	243	218	411
Peas	170	130	113	132	
Potatoes	1,209	1,214	1,155	1,377	1,512
Small Fruit	101	97	96	96	91

Of the crops included in the above table, wheat, potatoes, and small fruit are grown exclusively for human consumption, and the

remainder only partially so. Barley, oats, and rye are potential breadstuffs, and during the year 1917–18 were largely introduced into the loaf, especially barley. Beans were slightly used, while potatoes were also used somewhat largely at one time for this purpose.

The whole extent of the increased area devoted to food crops is not shown in these figures. Under the insistent call for home-grown food, a large number of allotments were created in and around the towns; parks, recreation grounds, golf links, etc., were partially cultivated, and private individuals dug up their lawns and grew vegetables on plots formerly devoted to flowers. Even the flower-beds in front of Buckingham Palace were utilised as potato grounds. The enthusiasm for the potato was, in fact, as it turned out, somewhat excessive, as both 1917 and 1918 were marked by good crops following on the exceptionally short crop of 1916. If the sky had rained potatoes, in response to Falstaff's invocation, they could hardly have been more plentiful, and there was, in consequence, a certain amount of

waste. The multiplication of self-suppliers, of course, greatly restricted the demand upon the supply grown for market.

While Paul might plant and Apollos might water, the increase remained in the hands of Providence, and the crops of 1918 were unusually good. Of the four preceding years 1914 was, on the whole, the best, the intermediate harvests being generally moderate. The production of corn crops and potatoes, in each year of the war—which included five harvests—in the United Kingdom, is shown in the following table, the numbers being in thousands :—

	1914	1915	1916	1917	1918
Wheat (quarters) .	7,804	9,239	7,472	8,040	11,643
Barley „ .	8,066	5,862	6,613	7,185	7,760
Oats „ .	20,664	22,308	21,334	26,021	31,196
Beans „ .	1,120	924	893	474	931
Peas „ .	374	300	261	278	441
Potatoes (tons) .	7,476	7,540	5,469	8,604	9,223

The difficulties confronting farmers in maintaining the meat and milk supply were not less than those with which they had to deal in maintaining the cultivation of the soil.

The problem which faced them was, indeed, in some respects more difficult. In the case of crops there was no dubiety as to their duty to the nation, or much reason to question that, on the whole, their self-interest pointed in the same direction. But it was not always clear whether the public interest would be best served by maintaining the number of live stock, or by deliberately reducing it. It was easy to see that it would be disastrous if milk-yielding cows and heifers were reduced in number, but beyond this it was uncertain. The clamour which arose over the alleged excessive slaughter of stock, especially calves, tended to perplex the stock-keeper. This question of the slaughter of calves, which so much agitated the Press and public from time to time, was not without its humorous aspect. It began first in the spring of 1915, when a number of persons, earnestly solicitous about our food supplies, discovered to their horror that a large number of farmers were either knocking calves on the head as soon as they were born, or were selling them for slaughter at

a very tender age. Why, these good people asked, with a vehemence which aroused the honest indignation of readers of the morning papers—why were not all these calves kept to maturity, and properly turned into much-needed beef? The crude physiological fact that the production of a calf is the necessary prelude to the production of milk, the economic fact that to the cow-keeper the calf is a bye-product which he disposes of if he can at a profit, but which he cannot possibly keep and rear without altering his whole business and reducing his stock of cows, were not appreciated by the average townsman. It wanted a still wider outlook to realise that any systematic prohibition, complete or partial, of the slaughter of calves must mean, in the long run, a limitation of the milk supply. If the number of calves born is to be determined not by the quantity of milk required, but by the number of stores which can at any time be dealt with by graziers, it is evident that the capacity of the country for meat production will always fix the limit of its output of milk. It is, of

course, desirable that as many calves as possible should be reared, but that is the same thing as saying that it is desirable to increase the home production of meat.

The Government, in the last year of the war, intervened very thoroughly in the business of the home meat supply, the whole trade in live stock for slaughter being taken under control, and the arrangements for marketing, slaughtering and distributing being undertaken officially. To say that this was agreeable to farmers, or that it encouraged the breeding of more stock, would be untrue, but the action of the State was accepted as inevitable, and stock-breeders generally carried on under the novel conditions as energetically as the inherent difficulties of the situation allowed.

The story of the live-stock interest during the war is shortly summarised in a statement of the numbers returned in June of each year, the figures being for the United Kingdom, in thousands :—

	1914	1915	1916	1917	1918
Dairy cows and heifers .	4,595	4,495	4,500	4,515	4,604
Other cattle . . .	7,590	7,676	7,952	7,867	7,707
Total cattle . . .	12,185	12,171	12,452	12,382	12,311
Breeding ewes . . .	11,256	11,342	11,604	11,445	10,986
Other sheep . . .	16,708	16,934	17,246	16,422	16,077
Total sheep . . .	27,964	28,276	28,850	27,867	27,063
Breeding sows . . .	495	439	435	374	412
Other pigs	3,458	3,356	3,181	2,634	2,397
Total pigs . . .	3,953	3,795	3,616	3,008	2,809

The steadfastness with which the herds and flocks were maintained throughout all the vicissitudes and difficulties of the war period is a record upon which British stock-owners may fairly be congratulated. The heavy loss of pigs was unfortunate, but there were peculiar reasons for this, and it is the class of stock which can be re-established in the shortest time.

Producers are never popular with consumers, and high prices of food do not engender a friendly feeling towards farmers. But when the history of home food production during the war comes in the future to be calmly reviewed, it will be recognised that, on the whole, the country is indebted to the agricultural community for a successful effort to assist in the great struggle. Those engaged in food production, whether as farmers or labourers, worked strenuously and unceasingly in a real spirit of patriotism to secure the utmost possible output. It is easy for the cynic to say of the farmers that the incentive was monetary gain, and he might say with equal truth that this was the

motive which impelled those who worked in munition factories. That many of those engaged in the production of war material—of which food is an important part—benefited financially, is true enough, but it is not true to say that it was only for personal gain that they worked as they had never worked before. There are a few wastrels in every class of the community, but the men who went from the countryside to fight, and who return to the old homes, may be assured that the overwhelming majority of those who were left behind were not shirkers, but in the sphere allotted to them honestly and faithfully "did their bit."

CHAPTER III

STATE CONTROL OF FOOD SUPPLIES

"*A nation is made powerful and honoured in the world not so much by the number of its people, as by the ability and character of that people.*"—WILLIAM COBBETT.

BEFORE the war the only interest which the State took in food supplies was to impose certain enactments and regulations for the protection of the consumer against fraud, misrepresentation and injury. The principles laid down in the Sale of Food and Drugs Acts had practically abolished the old condition of things when—

"Chalk and alum and plaster were sold to the poor for bread,"

and in the main the food supply of the people was honest and wholesome, as well as cheap. The State also drew a substantial amount of revenue from certain articles of food and drink, such as sugar, chocolate, cocoa, tea,

coffee and alcoholic liquors. Beyond this the feeding of the nation was left entirely to private enterprise, and the basic principle of supply was *caveat emptor*. Plenty of theoretical, and some practical, faults were to be found. Physiologists and medical men consistently pressed for stricter supervision and more meticulous regulation by public authorities, and undoubtedly their efforts had been beneficial. Step by step the general standard of food sold was raised, and its producers and purveyors were increasingly subjected to restrictions designed for the protection of the public. As to the sufficiency of supplies, which in earlier stages of our history had often greatly concerned the Government, no one suggested that any action of the State was necessary or desirable for the feeding of the nation in time of peace, though some urged that measures should be taken to ensure supplies in time of war. For current needs food of all kinds was plentiful, and it did not occur to any one that State action could increase the total supply.

In theory it is quite possible for the State

to undertake the supply to the nation of any commodity, as in France matches, and in Russia vodka, were supplied. Every state also bought and manufactured goods for the supply of its naval and military forces. Except in its magnitude, there is nothing novel in the socialistic ideal of the State as universal provider to the community of all the necessaries of life. The objections are not theoretical, but practical. The question to be faced is, will the community be better served, and with regard to food in particular, will the supply be equally good and plentiful? Every one answers this question, usually with extreme confidence, according to his convictions and prejudices, and, generally speaking, without any evidence to support his contention. The exigencies of war compelled the State to embark on many administrative adventures, and to undertake many economic experiments. When the time comes to review in detail the economic history of the war, the experience thus gained will form a valuable contribution to the discussion of the advantages and disadvantages of State

control of commodities. Whatever the conclusions may be, they will not solve the problem, for success or failure under the artificial economic conditions of the war furnishes no final evidence that similar results would follow under normal conditions. It is easy to show, for instance, that certain food prices would have been higher during the latter part of the war without state control, but this does not prove that prices would be lower under a system of maximum prices when economic conditions are normal.

The time has not yet come to discuss in detail the wisdom or unwisdom of the various steps taken by the Government during the war to ensure and regulate the supplies of food. Like all other measures adopted in this supreme crisis, they will form the subject of controversy for generations to come. At present it is not possible to view them in true perspective. Wisdom after the event is to be desired as a guide to action in the future, but it is futile as a basis for criticism of past action. Every step taken must be regarded in its relation to the circumstances

of the time at which it was taken, and the information then available to those who took it. One general observation may be made on this point. The Government may not always have had complete information on every occasion when they had to decide to act, or not to act, but it is certain that they usually had more comprehensive knowledge of the facts of the situation than their critics. At no moment throughout the war was the economic situation simple. Even when it was fairly clear as regards this country, there was always the effect on each of our Allies and the effect on the enemy to be considered, and the best course for this country might be highly inexpedient for reasons which were extraneous but exigent.

The sort of critic whose watchword is "thorough," and whose favourite adjective is "drastic," will never understand why the Government did not at the outbreak of war immediately take control of all food supplies, and put the country on rations. He will always maintain that this would have settled the food problem at once, and we should

have had no more trouble. Of course, in the nature of things he cannot be contradicted; he can only be disbelieved. At any rate, that course was not adopted. On the contrary, the policy adopted at the outset, and consistently adhered to throughout, was to deal with the situation as it developed, and to avoid putting the people to inconvenience and involving the State in large financial liabilities and a costly machinery of administration until it appeared to be inevitable.

The first action of the Government in regard to food supplies was to take stock of the resources actually in the country when war broke out. With the exception of returns of stocks of grain at the port, which were collected for the use of the grain trade, there were no statistics of the quantity of food in the country, although certain estimates of the normal stocks of wheat and some other foodstuffs (which proved to be substantially accurate) had been laid before the Royal Commission on Food Supplies in time of war. It may be said, indeed, that

the evidence and reports of that Commission, as well as the information collected by the Committee of Imperial Defence, contained a considerable amount of information which proved very useful. It was, however, necessary to organise at once a system of periodical returns of stocks of foodstuffs and of feeding-stuffs for cattle, and this was done in the first few days of the war—indeed, it was begun two days before the actual declaration of war. No legal power existed to compel traders to make such returns, but an Act was at once passed for the purpose. It may be recorded, however, to the credit of the trading community, that neither before nor after the passing of the Act was any reluctance (except in one or two rare instances) shown to give the information asked for, although it was of a nature which up to then had been regarded as a private, and often carefully-guarded, secret of business. This may be noted as the earliest interference by the State in the business of food supply. The exportation of food and of feeding-stuffs fro animals was at once prohibited, except by

licence. The control of exports, which was after a time placed in charge of a special department, was the subject of much public discussion. Our exports of food were, of course, practically negligible, and mainly consisted of supplies of certain articles, *e.g.* biscuits to India and the Colonies. There was, however, a considerable transit trade in some articles, such as tea, maize, etc. The restriction of exports had two objects, the conservation of our own resources and the prevention of supplies reaching the enemy. The latter object was, of course, part of the blockade which eventually developed into a system of rationing the supplies to neutral countries, whether reaching them direct or through this country. For a long time this control, which naturally involved diplomatic difficulties of some delicacy, was utilised as a means of coming to friendly bargains with countries such as Denmark, Norway and Holland, from whence we normally drew large quantities of food, for the maintenance of these supplies. Towards the latter part of the war these arrange-

ments were not maintained, our own supplies of these articles were substantially reduced in consequence, and the enemy for a time had the advantage of the food which had previously come here.

As we had drawn about half our supplies of sugar from enemy countries, this was the first article to claim the active intervention of the Government. On August 20, 1914, the Royal Commission on Sugar Supplies was set up, to control all imports of sugar, to buy all necessary supplies, and to regulate their distribution. This, in fact, embodied all the principles of State control which were afterwards adopted, except that of individual rationing. For a long time a system of regulated distribution through the normal trade channels was adopted, and worked so smoothly that, except for the increase in price, the public were hardly conscious of a change.

On the first day of the war, the Government announced that, reckoning the crop then being harvested, there was sufficient wheat in the country to last for five months.

During the next three months imports were practically sufficient to keep pace with consumption, so that at the end of October the stocks in the country were about the same as at the beginning of August. Nevertheless, as has been previously noted, the outlook was far from satisfactory. The action taken by the Government was two-fold. A Committee was set up to buy wheat and flour on Government account, so as to accumulate a reserve stock for the time when supplies might run short, and its operations were continued in the following year. In February 1915, an arrangement was made with the Indian Government for the exclusive shipment of wheat to the United Kingdom, under a system of regulated prices, a Committee being set up here to arrange for purchase, shipment and distribution.

The supply of meat to our rapidly growing armies soon involved the problem of the maintenance of supplies for the civilian population, and a scheme was arranged between the War Office and the Board of Trade, which later developed into a system

of the control and distribution of all oversea supplies.

During 1914 and 1915 the competition of France and Italy with the United Kingdom in the world's markets, especially for grain, had obviously tended to raise prices, and had been detrimental to the mutual interests of the Allies. The advantages of co-operation in obtaining supplies had been recognised, and at the instance of the British Government the Commission Internationale de Ravitaillement was established at the beginning of the war, consisting of representatives in the first instance of France, Belgium and the United Kingdom, and later of all the Governments who joined the Allied cause. At the end of 1915, with the assistance of the International Commission, a Joint Committee was established to purchase wheat and other grain for the Allies in common, and to arrange for freight and shipment to the respective countries. Two Committees were also set up to exercise control over British shipping. A large number of British vessels had, of course, been requisitioned for military

and naval service, and this was controlled by a special department of the Admiralty, but the regulation of shipping for civilian requirements, which were mainly grain, was undertaken for some time by these Committees.

Shipping was the dominant factor of the whole food supply position. Up to the end of 1915, the actual loss by enemy action of food-carrying vessels had been relatively small, and the losses from the ordinary risks of sea were less than the average—an extraordinary tribute to British seamanship, in view of the fact that the lights were extinguished round the coast, and the difficulties of navigation were greatly increased. In 1916 the submarine attack became more effective, and food-ships suffered heavily, many cargoes of wheat being lost. Oversea supplies had nevertheless been well maintained. During the last five months of 1914, the imports of wheat and flour amounted to 2,500,000 tons; during the year 1915 to 5,000,000 tons, and in 1916 to 5,500,000 tons. The imports in May and June 1916, were the largest which had been made in a similar period since

August and September 1914, when they were unusually heavy. It could not be said, therefore, that there had been any breakdown in the arrangements for maintaining supplies, but, nevertheless, it was apparent that with the ever-increasing difficulties of freight, more stringent measures were desirable, if not imperative.

On October 11, 1916, the Royal Commission on Wheat Supplies was appointed and took over the functions of the Grain Supplies Committee. It was entrusted with full powers to purchase, sell and deal in grain, and it speedily took control of the whole trade in imported grain. It also, shortly after its appointment, took over the functions of the Allied Grain-Purchasing Committee, and a new inter-allied body known as the Wheat Executive was established, the Wheat Commission acting as its agents.

The appointment of the Wheat Commission marked a definite stage in the development of food control, and as it came just after the end of the second year of the war, the

following statement showing the imports of the main foodstuffs during the two "cereal years" may be of interest. The figures are in millions of hundredweights:—

	1914–15	1915–16
Wheat and Flour . .	111·5	111·8
Rice	10·1	8·3
Sugar	35·8	32·0
Beef	8·0	7·3
Mutton	4·6	3·5
Bacon	6·4	6·9
Hams	1·3	1·4
Butter	3·7	2·8
Margarine . . .	1·7	2·6
Cheese	2·8	2·5

The next, and still more important stage, in the development of food control, was the appointment of a Food Controller. On November 15, 1916, in the course of a debate on food prices, the Government announced their decision to appoint a Food Controller. On the following day powers as to the maintenance of food supply were conferred on the Board of Trade under the Defence of the Realm Act, and in the next few days four Orders were made regulating the making

of bread and flour, prohibiting the use of wheat for brewing, fixing the price of milk, and regulating meals in public places. On December 15, a bill providing for the appointment of a Food Controller was introduced, and on December 22 passed into law. Lord Devonport was appointed Food Controller four days later.

By the terms of the Act (6 & 7 Geo. V, c. 68) the Food Controller was appointed "for the purpose of economising and maintaining the food supply of the country during the present war," and his duty was stated to be "to regulate the supply and consumption of food in such manner as he thinks best for maintaining a proper supply of food, and to take such steps as he thinks best for encouraging the production of food." The last-named duty, that of encouraging production, so far as it related to production in this country, was, obviously, a function of the Departments of Agriculture, and the Food Controller at once proceeded to come to an arrangement whereby, without relinquishing his statutory powers and duties, active measures for en-

couraging home production were left to those Departments. The Board of Agriculture and Fisheries established a special branch, called the Food Production Department, while the Scottish and Irish Agricultural Departments carried out the duties falling to them—in co-operation with the English Department—without any material change in the organisation of their offices, other than the appointment of such special officers as were necessary. Meanwhile the Government announced its agricultural policy (subsequently embodied in the Corn Production Act, 1917), under which minimum prices for wheat and oats were fixed for six years, the principle of a minimum wage for farm labourers was adopted, and provision was made for the enforcement of proper cultivation and for restricting the raising of agricultural rents.

To secure economy in the use of food was not only the primary duty of the Food Controller, but the opening of the "unrestricted" submarine campaign early in 1917 emphasised its importance. The menace to our food supplies was not only grave, but it

was incalculable. Until then, after the first few weeks of the war, we had been able to measure the risk, and the wonderful efforts of the Navy and the Merchant Service had reduced it to proportions which had enabled our oversea supplies to be maintained with some amount of difficulty, but without serious alarm. The new campaign of the Germans was, however, loudly advertised as intended to effect the starvation of this country and to finish the war. The country ought, perhaps, by then to have become accustomed to German predictions, and to have placed more confidence in the capacity of the Navy to defeat the utmost endeavours of our enemies at sea. But it needed some coolness to calculate the reasonable chances and, in any case, whatever they were, the necessity of reducing as much as possible the demands upon shipping was evident, especially as it became impossible to resist the demand for increasing reserve stocks by increased importation. The effect of what seemed a wise precaution was to use up more shipping for food supplies at a time when it was most

short, and as it turned out the additional reserve stocks were not actually required.

The idea of accumulating large reserves of foodstuffs in this country was one which all through the war obsessed many people who were at a loss to understand why so obvious a step was not taken. It may now be pointed out that it was not possible, and it never will be possible, to build up reserve stocks during a great war. The world's supply of any food is governed by the world's demand, and, generally speaking, the year's production is not, except by accident, substantially greater than the world's requirements. If, therefore, in any one year a nation were to attempt to secure not twelve months' but eighteen months' supplies (so as to get a six months' reserve stock), it would not only have to pay exorbitant prices, but to the extent to which it succeeded, other nations, including its Allies, must go short. Another consideration is that it is worse than useless to land supplies in this country for future consumption unless they can be properly stored. All food is perishable, and even wheat, which is perhaps

the least perishable, will waste heavily unless it is placed in suitable stores—as the experience with Australian wheat, which was perforce kept as a "reserve," though unobtainable, demonstrated. The Army and the Navy must have large stocks, because they require them to be available at numerous points of distribution, to provide for sudden and unforeseen contingencies, and because their stores in the nature of things are specially liable to destruction. This extra demand on the world's supplies must be met, but the accumulation of additional stocks for the civilian population on any large scale is, frankly, impossible in war-time. If a reserve stock is thought to be necessary, it must be gradually built up during peace. After war begins it is too late to repair the omission.

The Food Controller tackled at once the problem of economising food supplies. On February 2, 1917, he issued an appeal to the Nation, requesting every one to limit their weekly purchases of bread, meat and sugar, to definite quantities which were named. A Food Economy Department, and a depart-

ment for Women's Service were established, and the assistance of the War Savings Committee, which had already been successfully engaged in preaching the general need for economy, was enlisted. An energetic campaign by public meetings, advertisements, leaflets, etc., was conducted, and was greatly assisted by the co-operation of the Press. Attention was especially directed to the need for economy in bread and grain generally, and at the beginning of May this was the subject of the following Proclamation by the King :—

BY THE KING

A PROCLAMATION

GEORGE R. I.

We, being persuaded that the abstention from all unnecessary consumption of grain will furnish the surest and most effectual means of defeating the devices of Our enemies and thereby of bringing the war to a speedy and successful termination, and out of Our resolve to leave nothing undone which can contribute to these ends or to the

welfare of Our people in these times of grave stress and anxiety, have thought fit, by and with the advice of Our Privy Council, to issue this Our Royal Proclamation, most earnestly exhorting and charging all those of Our loving subjects the men and women of Our realm who have the means of procuring articles of food other than wheaten corn, as they tender their own immediate interests, and feel for the wants of others, especially to practise the greatest economy and frugality in the use of every species of grain: And We do for this purpose more particularly exhort and charge all heads of households to reduce the consumption of bread in their respective families by at least one-fourth of the quantity consumed in ordinary times; to abstain from the use of flour in pastry, and, moreover, carefully to restrict or wherever possible to abandon the use thereof in all other articles than bread:

And we do also, in like manner, exhort and charge all persons who keep horses to abandon the practice of feeding the same on oats or other grain, unless they shall have received from Our Food Controller a licence to feed horses on oats or other grain to be given only in cases where it is necessary to do so with a view to maintain the breed of horses in the national interest.: And We do hereby further charge and enjoin all Ministers of Religion in their respective churches and chapels within Our United Kingdom of Great Britain and Ireland to read, or cause to be read, this Our Proclamation on the Lord's Day, for four successive weeks after the issue thereof.

Given at Our Court at Buckingham Palace, this Second day of May, in the year of our Lord one thousand nine hundred and seventeen, and in the Seventh year of Our Reign.

GOD SAVE THE KING.

There was, of course, criticism of this policy of appealing to the people to economise, rather than compelling them to do so. Its success was its justification, for neither before nor since has the consumption of grain by the nation as a whole been so small as it was during this period. This achievement was especially notable in view of the fact that potatoes, owing to the failure of the home crop, and the impossibility of obtaining supplies elsewhere, were unusually scarce.

In the meantime all flour-mills had been taken over by the Government, the price of the 4-lb. loaf was fixed at a maximum of 9*d.*, involving a heavy loss to the State which now held the monopoly of the supply of bread to the people, and effectively controlled all its stages from the field (at home or abroad) to the table. Beginning in November 1916, the composition of the loaf was, step by step, changed by the inclusion of a greater proportion of the wheat (*i. e.* by a higher "extraction" of flour), and by admixture with other grain. By the end of May 1917 the State controlled the importation of sugar, wheat,

flour, rice, beans, peas and oats, and was rapidly extending its grasp over other imported supplies.

The first step in price-fixing was taken in November 1916, when a maximum price for milk was imposed. Potatoes were next dealt with, and thereafter Orders fixing maximum prices for various articles of food were issued in rapid succession.

The imposition of a system of compulsory rationing was under active discussion during this period, and while the appeal for voluntary rationing was being made, a department of the Food Ministry was set up to prepare a scheme of general compulsory rationing for use, if and when required. The German and other systems were carefully examined, and two alternative schemes—one of which was with some modification eventually adopted—were elaborated in detail, and considered by a special Committee, in readiness for the decision of the Government.

Whether the adoption of the ticket system of compulsory rationing was decided upon by the Government at the right time, or in the

best form, is another of those debatable questions about which those interested may dispute indefinitely. From the point of view of the conservation of food supplies, it is not certain that it was in all cases the only means, or even the best means, of securing that object, and, indeed, it was not primarily from that point of view that it was eventually put into force. After the resignation of Lord Devonport, and the appointment of the late Lord Rhondda as Food Controller in June 1917, a considerable period elapsed during which the new Minister was taking stock of the position and deciding on his course of action. During this time the unequal distribution of supplies, which had previously aroused dissatisfaction in some localities, led to serious and general protests, and it may be said that "queues" were the immediate cause of the introduction of the "coupon." The chief recommendation of the ticket system, which outweighed all objections, is that it is the best means by which equality as between individuals can be secured. Absolute equality no system can

secure, so long as human nature retains its imperfections, and no vigilance in enforcing penalties could prevent instances of evasion and favouritism. But, on the whole, the system, irksome as it was, worked successfully. The evident reluctance of the Government to adopt it, and the very unsatisfactory situation which had arisen before they did so, helped to secure its acceptation by the nation. The people felt convinced that it was necessary. The British people, as the war has repeatedly shown, will endure much inconvenience, and even hardship, if they are convinced of the necessity, but they will resent and resist very forcibly being subjected to annoyance without adequate cause.

When all criticism has been made, and all defects noted, it may fairly be said that the compulsory rationing of food in this country was accomplished without serious difficulty owing largely to the good sense and public spirit displayed by the people generally.

The foods rationed were meat, sugar, butter, margarine and lard, and the fact that

the most vital of all—bread—was not rationed, is sufficient evidence that wheat supplies were never in serious danger. When the war ended in November 1918, the stocks of wheat and flour in the country were practically as large as at any time during the war and, of course, very much larger than in time of peace. Nearly every article of food was subject to maximum prices; the supply and distribution of all the primary articles were either completely taken over or subject to strict official supervision. Supplies were on the whole well maintained up to the requirements of the nation, though meat, bacon and butter were at times scarce. The development of the manufacture of margarine in this country did much to make up the deficiency of fat caused by the cessation of supplies of butter from Denmark and margarine from Holland.

The stocks of food in the United Kingdom, prior to the establishment of the Ministry of Food and subsequently, are shown in the following summary, the figures representing thousands of tons :—

	1916	1917		1918		1919
	Sept. 1	Jan. 1	Sept. 1	Jan. 1	Sept. 1	Jan. 1
Wheat (including Flour)	2,599	1,815	3,290	2,117	3,408	2,910
Rice	71	60	88	120	207	140
Meat	34	62	66	87	79	137
Bacon and Hams	38	27	29	9	94	46
Fats	31	17	48	7	42	43
Sugar	137	108	181	197	424	382
Tea	43	58	21	17	45	65

The effect of Food Control on prices is indicated in two tables published in the Report of the War Cabinet for the year 1918.[1] The first shows the rise in price of controlled food in the United Kingdom as compared with other articles, taking July 1914 as a basis (see p. 87).

The details of price movements in other countries are difficult to trace precisely, but taking the four foods, bread, beef, butter and milk, the following comparison is given of the course of prices in the United Kingdom and certain other countries (see p. 88).

It may no doubt be claimed that the

[1] Cmd. 325.

	July 1914	July 1917	Oct. 1917	July 1918	Oct. 1918	Average monthly increase. July 1914–July 1917	Average monthly increase. July 1917–Oct. 1918
Principal controlled foods .	100	205	194	202	216	2·92	0·73
All principal foods . .	100	203	198	213	229	2·87	1·73
Textiles Leather, etc. .	100	234	245	294	313	3·72	5·27
Coal	100	135	135	163	177	0·97	2·80
Soap	100	133	150	233	233	0·92	6·67
Candles	100	184	184	329	348	2·33	10·93
Household oils . . .	100	215	286	319	319	3·20	6·39

	July 1914	July 1917	Oct 1917	July 1918	Oct. 1918	Average monthly increase. July 1914–July 1917	Average monthly increase. July 1917–Oct. 1918
United Kingdom . .	100	185	179	179	195	2·36	0·67
France	100	170	160	203	220	1·94	3·33
Italy	100	149	154	256	264	1·36	7·67
United States . . .	100	140	148	153	161	1·11	1·40
Sweden	100	160	178	268	305	1·66	9·67
Switzerland . . .	100	180	186	213	215	2·22	2·33
Germany	100	181	201	249	228	2·25	3·13
Austria . . .	100	318	367	502	622	6·06	20·27

relatively favourable record of the United Kingdom was due to the control of prices by the State, but this was not, in fact, the dominating influence, although, unquestionably, at certain times the price of particular articles would have risen much higher but for the imposition of maximum limits. Maximum prices were, however, generally speaking, not fixed below the level at which the commodities could be bought overseas or profitably produced at home. Bread was the main exception, and in that case the price was deliberately kept down by means of a heavy draft upon the National Exchequer — a political measure the wisdom of which is debatable. The true reason for the fact that food prices generally rose less in the United Kingdom than in any other European country, was that supplies were on the whole more plentiful. Control of prices was mainly intended as a protection to the consumer against exploitation by the sellers of foodstuffs, and it was in some degree effective as such. It is, however, not certain that it was the best means of curbing the natural

tendency of the sellers of goods to take advantage of temporary or local shortages. A system of maximum prices entirely eliminates competition between traders. Not only is a maximum always a minimum, but the trader meets all remonstrance by the statement that it is "the Government price," and assumes he is authorised, and even ordered, not to sell for less. While, no doubt, there were times when price-control prevented a great rise, there were also times when certain foods could probably have been bought more cheaply if there had been no "Government price." If it had been possible to devise some system by which the profits of individuals, instead of the prices of commodities, could have been controlled—as was, indeed, suggested in the early days of the Food Ministry—it is probable that the practices of the profiteer might have been more effectively restricted. Any system of maximum prices must necessarily be based on a flat rate. An attempt made in connection with milk to establish differential prices adjusted to varying costs of production proved

conclusively—what, indeed, required no demonstration—the impracticability of applying such a principle, however defensible it might be in theory. A flat selling-price, however, must necessarily involve excessive profits for efficient and favourably situated traders, while at the same time, it inflicts hardship on the "small" men. It may, perhaps, be cited as an example of the inherent difficulty of co-ordinating the public services of a community, that while we have an elaborate machinery for assessing with meticulous accuracy the profits of traders for purposes of Income Tax, no attempt was made to utilise or adapt this machinery for the restriction of profiteering. Popular indignation against profiteering failed to realise that the system of maximum prices, while checking the more blatant methods of the profiteer, inevitably legalised, and appeared to authorise, undue profits for many individuals.

Much the most difficult of the problems of the Food Ministry was the control of distribution. The arrangements had necessarily to be different for each of the main articles,

and in the end very complicated administrative machinery was constructed throughout the country.

Schemes for the distribution of various commodities began to be devised early in 1917, when the plans for rationing were laid down in readiness for the decision of the Government. The control of certain imports of butter and cheese had been exercised by the Board of Trade at a still earlier date, and the Sugar Commission had, from the beginning of the war, adopted a comparatively simple and effective method. Broadly, the principle of these early schemes was the tying of retailer to wholesaler and wholesaler to importer, on the basis of the amount of business done by each at a previous period known as the datum period. This plan had the merit of preserving and utilising the normal trade channels of distribution, was simple and inexpensive to work, and avoided the need for the employment of a large staff of officials. One defect of the datum period system was, that it did not allow for changes in population and other alterations, but this

was remedied by adopting the plan of basing the distribution on the actual requirements of the retailer for the supply of his registered customers.

Much more complicated arrangements were subsequently made in connection with the distribution of potatoes, milk, meat and some other articles. The scheme of meat distribution was the most elaborate as it involved the collection and distribution of home live-stock as well as of imported meat. The system consisted of two main parts: (*a*) a territorial organisation for the control of live-stock, and (*b*) an organisation of the meat trade for the regulation of distribution. The initial stages of the process were marked by the registration of auctioneers, cattle-dealers, butchers and slaughter-house keepers, and by fixing maximum prices first for meat, and later, under a grading system, for fat cattle and sheep. The grading system did not work very satisfactorily, and sale by dead weight at Government slaughter-houses was substituted in many districts. The unit was an area consisting of one or more

counties under a Live-Stock Commissioner, and the pivot of the scheme was the Area Meat Agent, working with the Commissioner and a representative Meat Distribution Committee, who were notified of the requirements of the district and arranged for its supply, either in cattle or dead meat. The retailer was allowed to buy only upon a permit, but in a number of cases a Butchers' Committee was formed for the Food Control Committee's district which bought for the district on a single permit.

The necessary interference by the Government with the freedom of individuals to eat what they liked, or could afford, and to buy it where they chose could not be expected to be popular. It was done with anxious care and deliberation, and with all possible consideration for the susceptibilities of the public, but nothing could prevent some amount of irritation and much inconvenience. Those who were responsible for the administration would be the first to admit that the success with which the various schemes of food control were carried through was mainly

due to the amazing patience and goodwill with which the public co-operated. The old virtues of the English race were never more clearly shown than in the spirit of loyalty and orderliness with which, on the whole, they submitted to the irksome conditions imposed upon them in connection with the supply of their daily food.

III.—AFTER THE WAR

CHAPTER I

THE WORLD POSITION

"Every man shall eat in safety
Under his own vine what he plants, and sing
The merry songs of peace to all his neighbours."

SHAKESPEARE.

THE statement that the Great War has created a new world has become an oratorical platitude, but it is only a half-truth. The world after all is what its inhabitants make it, and only a new race of human beings could make a really new world. Human nature with all its aspirations and limitations remains essentially unchanged through the ages. An infant crying for the light—this is the state of man yesterday, to-day and to-morrow. The instinct for the light, which he shares with plants, the craving for a higher good, is cumbered by the combative

instinct which he shares with animals. Not until the fundamental competitiveness of human nature is eradicated will the dream of universal brotherhood be realised.

The development of civilisation — the emergence from the isolated struggle for life into the social state—is due to the human faculty of learning by experience, and of constructively using the knowledge so acquired. The great sociological lesson of the war is the inter-dependence of nations. Alliances for mutual aggression or defence have been common in history from the earliest times. The lesson which the experience of the war has taught, is that the world is an economic entity, not mere congeries of competitors. The fact dimly discerned by communities like our own which lives, moves and has its being by the sea, has been impressed with the force of a revelation on the consciousness of mankind.

It is for this reason that the League of Nations, embodying the far-off vision of poets, has become at last a possibility of practical politics. Its ostensible cause

for existence may be to ensure peace among the nations, but its solid foundation is mutual relationship and common interest in the basic needs of humanity. In other words, the chain which will effectually bind the nations of the world together, is the sense that they are members one of the other, not only in times of crisis, but in the everyday business of life. Thus the wheel comes full circle, and the primary need of the savage—his daily food—may, by progressive stages of social evolution, compel the federation of the world in response to the same impulse.

The circumstances under which the League of Nations was conceived, and the embodiment of its constitution in a Treaty of Peace, mask the fact, which will become more evident in time, that its real basis is economic. Its objects are thus set out:—

> "To promote international co-operation and to achieve international peace and security
>
> "by the acceptance of obligations not to resort to war;

"by the prescription of open, just and honourable relations between nations;

"by the firm establishment of the understandings of international law as the actual rule of conduct among Governments; and

"by the maintenance of justice and a scrupulous respect for all treaty obligations in the dealings of organised peoples with one another."

Among the specific provisions of the Treaty defining the functions of the League is the obligation "to secure and maintain freedom of communications, and of transit and equitable treatment for the commerce of all members of the League." Article 24 recognises the steps which have already been taken in this direction, and contemplates the development by the League of such international organisations, of varying scope, as existed before the war. It runs:—

"There shall be placed under the direction of the League all international

bureaux already established by general treaties, if the parties to such treaties consent. All such international bureaux and all commissions for the regulation of matters of international interest hereafter constituted shall be placed under the direction of the League.

"In all matters of international interest which are regulated by general conventions but which are not placed under the control of international bureaux or commissions, the Secretariat of the League shall, subject to the consent of the Council, and if desired by the parties, collect and distribute all relevant information, and shall render any other assistance which may be necessary or desirable.

"The Council may include as part of the expenses of the Secretariat the expenses of any bureau or commission which is placed under the direction of the League."

Knowledge of the facts is, or should be, a condition precedent to action. Most of

the administrative mistakes which have been made during the war have arisen from neglect of this principle, sometimes unavoidably because the necessary information was not available, and sometimes because the responsibility for action was not co-ordinated with the responsibility for information. Trustworthy information in regard to the world's economic conditions is scanty and partial. Much which passes for information is at the best inference, and at the worst imagination. Such information as exists is collected by various agencies which work independently, and often in ignorance of the details of each other's activities. Consequently, while one field of knowledge is untouched, there may be several searchers after truth labouring in another. The League of Nations affords for the first time the means and opportunity for extending economic inquiries, so as to embrace and co-ordinate under international direction information of the world's production, distribution and consumption of commodities.

Meanwhile, as has been pointed out in previous pages, information as to the world's

food supplies is imperfect, and estimates of the present and prospective demand for them must be speculative.

When the Armistice was signed on November 11, 1918, it was easy to foresee a period not only of social reaction and restlessness, but also of economic disturbance and difficulty. It was hoped that the political settlement, complicated and prolonged though it might be, would be completed at any rate before the next European harvest. But a year which many thought to be the most critical has expired, and it is scarcely more easy now than it was at the end of 1918 to calculate the chances of the future. The worst fears as regards supplies of food have not been realised. There were some who thought that the urgent demands of Central Europe would be so enormous that existing supplies could not satisfy them unless other nations went short. Central Europe would no doubt have welcomed larger supplies than financial and transport conditions made possible, but the world's supplies proved more than adequate for the

effective demand, and when harvest-time came in 1919, there remained in Argentina and Australia a substantial "carry-over" of wheat into the next cereal year, while the people of Europe, though still suffering privation, were, for the most part, better fed than during 1918.

The most critical period having passed, the question remains how far the world's supplies will suffice for actual requirements during the present year and thereafter. Let us examine the probable position in regard to wheat. The table on p. 104 was recently given in an authoritative trade-journal [1] showing the estimated crops in 1919, and the estimated requirements in 1919–20 of the wheat-importing countries.

It is noted that the consumption reckoned for Italy shows a substantial increase on the pre-war average to allow for the additional population and increased consumption, while, on the other hand, the consumption of France is reduced to allow for the effect of high prices.

[1] *Corn Trade News*, September 16, 1919.

Country.	Estimated Crop.	Normal Consumption.	Estimated Imports 1919–20.
	qrs.	qrs.	qrs.
United Kingdom	9,500,000	34,000,000	24,500,000
France	23,000,000	45,000,000	[1] 16,000,000
Italy	19,500,000	[2] 32,000,000	11,000,000
Spain	16,700,000	18,000,000	1,500,000
Portugal	800,000	1,100,000	500,000
Greece	500,000	?	1,500,000
Holland, Switzerland, and Scandinavia	3,500,000	8,700,000	5,000,000
Belgium	1,000,000	8,000,000	7,000,000
Total without Central Europe			67,000,000
Germany	11,000,000	26,000,000	15,000,000
Austria-Hungary, Czecho-Slovakia	18,000,000	27,000,000	9,000,000
Total for Europe			91,000,000
Ex-Europe			5,000,000
Grand Total			96,000,000

[1] The quantity is reduced to allow for the effect of high prices.

[2] A substantial increase on the pre-war average to allow for the additional population and increased consumption.

The requirements of importing-countries before the war varied to some extent from year to year, according to their crops, but the total did not usually exceed 75,000,000 quarters. If the estimate above given should prove accurate, the demand on exporting-countries would, therefore, amount to some 20,000,000 quarters more than in pre-war times. On the face of it, this would appear to be an alarming prospect, bearing in mind the fact that no reliance can be placed on the availability of the existing surplus in Southern Russia and the Balkans. The exportable surplus from North America and Argentina for the present cereal year is largely above pre-war figures, while India and Australia have also to be reckoned with. But if the total demand estimated above were to become actually effective, it is doubtful if it could be met. This is the uncertain factor.

It may be said at once that no sufficiently trustworthy statistical information is available to enable the estimates of requirements put forward by a competent authority to be con-

tested in detail, but one or two general observations may be made with regard to the common assumption that the oversea food requirements of war-ridden Europe will be now and for some time largely in excess of their pre-war demands. The devastation of productive areas, the lack of fertilisers, the deficiency of cattle-food, the reduction of stock and the shortage of labour, are all adduced, very plausibly, in support of the view that the native supplies are greatly diminished, and that greatly increased imports are required.

In calculating the effects of warfare on the agriculture of a country, it is possible to exaggerate. No one who visited immediately after the war the tracts of France and Belgium on which for four years the armies fought, and over large parts of which the terrible tide of battle ebbed and flowed, is likely to minimise the abomination of desolation of those once fair and fertile fields. It is well to remember, however, that these stricken fields, wide as they are, represent only about 5 per cent. of the total area of

France before the war. Of the 4,000,000 acres rendered useless by war, nearly one-fourth were handed back to the cultivators before a year had elapsed. The cultivation of the soil was maintained, fearfully and fitfully, up to the very edge of the battle-grounds, and within a few weeks of the final withdrawal of the enemy, the indomitable peasantry were pushing the plough over the restored fields wherever the wreckage of war left a little space. Even here may be realised that "amplitude of nature" which Ludendorff complained prevented his utmost concentration of artillery from reaching every part of the country within range. On other fronts large armies passed over the land, and ravaged as they went, but the injury to the land was temporary. The marks of their passage will long remain on the works of man—in razed villages and wrecked towns—but in one season Nature almost obliterates the traces of their presence on the open fields.

During the war the supply of fertilisers was seriously disturbed, and certain kinds

were deficient in those countries where they are mainly used. Germany was practically the only source of supply for potash before the war, and consequently countries like the United Kingdom, which imported large quantities, felt the deficiency. In Western Europe, apart from potash, supplies of nitrogenous and phosphatic manures were reduced by the competing demand for certain essential materials required in the manufacture of munitions. Nitrate of soda and superphosphate were especially affected. The exports of nitrates from Chile, phosphate rock from Northern Africa, and pyrites from Spain, were, however, fairly well maintained notwithstanding shipping difficulties, and on the whole no serious reduction in the productivity of the land or the output from it, can be attributed to the temporary lack of artificial fertilisers in the Allied countries. The sandy soils of North and East Germany, which depend very largely for the maintenance of their output on regular applications of fertilisers, were seriously affected by the deficiency of phosphatic and nitrogenous manures. Be-

fore the war Germany used 273,000 tons of nitrogen, and 782,000 tons of phosphoric acid, and it is estimated in a recent report[1] that in 1918 the supplies available for agriculture were 120,000 tons of nitrogen and 220,000 tons of phosphoric acid. During the war, however, the production of nitrogen from the air was very greatly developed in Germany for the making of munitions, and there is good reason to believe that the supply of nitrogenous manures for the crops of 1918–19, and subsequent years, was at least equal to the total pre-war supply. Phosphatic manures are, and will for some time continue to be, short, but it may be doubted whether the crops in Germany after 1919 will materially suffer from a deficiency of fertilisers. In the special case of the sandy soils referred to, the absence or presence of artificial manures has an exceptional influence, and the effect of their application is rapid, while the effect of withholding them is gradual. Ordinarily, however, the increase or decrease of the yield of crops

[1] Report on Food Conditions in Germany (Cmd. 280).

over the whole country, of even the total absence of artificial fertilisers is, measured in bushels, comparatively small, and much less than the effect of weather conditions during growth.

The deficient supply of feeding-stuffs, and the reduction in the number of farm animals consequent thereon, have reduced the productivity of European agriculture more seriously than the shortage of fertilisers. All importing countries suffered more or less from deficient supplies, but Germany most severely. In the report already quoted, it is stated that "in 1912–13, 157,838,000 tons of fodder was used for feeding to animals in Germany, and of this amount 5,926,000 tons were imported." The figure of total consumption so far as it relates to home production may be taken as little more than a guess, but the cessation of imports—which included the equivalent of 1,455,000 tons of oil cake—could not fail to affect meat and milk production. Of home-produced feeding-stuffs, milling offals were stated to be reduced by about 5,000,000 tons by the

increased flour extraction from the cereals milled for bread. It was estimated that in 1912 about 2,250,000 tons of wheat and rye were fed to stock. The use of these cereals for stock-feeding was prohibited during the war, and although such a prohibition can never be completely enforced, it had no doubt a substantial effect. The use of potatoes for stock-feeding was restricted, and not more than half the quantity so used in 1912 was used in 1917. The result of the restriction of feeding-stuffs, was that, according to the statistics furnished by the German Government, the number of cattle was reduced during the war by about 4,000,000, or 20 per cent., and of pigs by about 15,000,000, or 60 per cent., the number of sheep being practically unchanged. The number of horses was maintained, and the number of goats increased. The reduction in the number of pigs appears startling, but it may be remembered that in the United Kingdom pigs were reduced by 30 per cent., while both France and Italy suffered very heavy depletion of their farm stock, and Belgium

was left in a far worse case than any other country. The effect of the shortage of feeding-stuffs, which was shared in a greater or less degree by all European countries, was, however, felt more directly in the reduction of the output per head of meat and milk, than in the actual depletion of the number of animals. German official figures state that the average slaughter-weight of cattle per head fell by one-half, and although this is improbable, it is quite possible that it may have decreased by one-third, while the milk yield per cow may have diminished to a still greater extent. In the United Kingdom the reduction in the average carcass-weight of beef-cattle was somewhere about 20 per cent., and a similar but smaller reduction occurred in the yield of milk per cow.

Taking the German position as a sample of the effect of the war on farm stock in Europe, it may at once be said that there is nothing to cause alarm for the future. Cattle stocks will take longest to recover, but a sufficiency of feeding-stuffs will speedily restore the average output of meat and milk

per head, and two or three years will suffice to re-establish the numbers. The stock of pigs can, of course, be restored in a still shorter period.

The depletion of farm stock reacted on the productivity of the land, and the paucity, as well as the poverty, of farmyard manure, was a more serious factor than the deficiency of fertilisers, as it affected tens of thousands of the smaller holdings on which extraneous manures are unknown.

The shortage of labour is commonly believed to have affected very materially agricultural production in Europe. Of the millions of men in the armies of all the nations engaged, it would probably be safe to assume that at least three-fourths were withdrawn from agriculture. At the same time the supply of implements and mechanical appliances for supplementing manual labour was practically stopped for five years. On the face of it, therefore, it would appear that the absence of labour would have greatly reduced the output from the land. That it did so, to some extent, is certain, but it is

equally certain that the reduction was much less than *prima facie* would have seemed probable. The work of French women, assisted by old men and boys, in keeping the land cultivated, and maintaining food production, has been seen and admired by all the nations who fought on the soil of France. It was not only in France, however, that the place of the absent soldier was filled by those who were unable to fight, while it must be remembered that before the war had been long in progress, large numbers of men returned, as prisoners, to the cultivation of the soil. The report on food conditions in Germany already cited states :—

" The accounts which we have received from the various agricultural officials, and also from the farmers whom we met, did not indicate that agriculture had suffered to any serious extent during the war from lack of labour. At one time 1,500,000 prisoners were employed in agriculture. As in England, large numbers of voluntary workers also assisted. The extraordinary

clean condition of the crops is a clear indication of the great care which has been taken to keep the land clean."

Numerous reports have been made setting out in detail the position as regards present food supplies, and prospects of agricultural production in some of the regions affected by war conditions. Some of these have been published, and others have been prepared for the information of the authorities charged with the obligation of assisting, so far as practicable, in relieving immediate distress. In many parts of central and south-eastern Europe there have been throughout 1919 conditions of extreme privation, and even of starvation. These conditions, however, have been due as much to the collapse of the machinery of distribution as to an absolute shortage of supplies. Broadly speaking, in the rural districts there has been sufficiency, and even in some cases plenty, while in the towns and urban areas food supplies of all kinds have been seriously deficient.

The recovery of industry and commerce from the grievous wounds of the war will be

a long process, though it may be accelerated by the energy or retarded by the perversity of man. The recovery of agriculture is more rapid and more certain. It depends mainly on Nature, which never "strikes" or "shuts down," but proceeds unremittingly with the work of reproduction and recuperation. The cultivator of the soil lives in too intimate contact with the law that "if a man will not work neither shall he eat" to cease his efforts to produce food, as soon as he has a reasonable sense of security that he can gather the fruit of his labours. The restoration of the standard of pre-war food production over the troubled territories is not primarily an agricultural question. Settled political and social conditions which will ensure to every producer that when he has expended his capital and his labour he will not be robbed of the results, are the basis of production. Where there is no security there is no enterprise, and even the peasant will take no trouble to do more than scratch the soil and trust to luck. So long, therefore, as there is social insecurity, food production

will be deficient; but wherever ordered government is re-established, and the elementary right of man to the reward of his forethought and toil is recognised, agriculture will rapidly be restored. It is, of course, true that at the time of writing the requisites of improved farming are more or less deficient all over the Continent. Live-stock, horses and implements, are lacking in many districts, but it must be remembered that to some extent this is due to re-distribution rather than to destruction. The invaders pillaged and "requisitioned," but did not always destroy, so that the loss of one district may sometimes have been the gain of another.

We may proceed on two assumptions: (1) that, given settled social and political conditions, food production in Europe as a whole may be expected to be restored to its pre-war level in the course of two or three years, or, say, after the harvest of 1921; and (2) that in the meantime, and especially during the harvest year 1919–20, production will be below the pre-war level in

most areas, and seriously below in some. It may now be of interest to see what were the drafts of Europe upon the world's supplies of cereals before the war. The table on p. 119 shows the net quantities (in thousands of tons) imported in 1913.

The statement is not absolutely complete, and figures relating to only one year may be affected by seasonal conditions. Generally speaking, however, the imports in 1913 were above the average of the years immediately preceding, and there is an advantage in taking the latest pre-war year as representing the demand of the maximum population. As a matter of fact, when allowance is made for increasing consumption, the imports from year to year are fairly constant, *i.e.* the effect of the variation in home crops on oversea requirements is comparatively small. The reason for this is probably to be found in the interchangeability as breadstuffs of the cereals over a large part of Europe, and also in the elasticity of the quantity fed to stock. In other words, a bad harvest affects the use

	Wheat.	Wheat Flour.	Rye.	Barley.	Oats.	Maize.	Rice.
United Kingdom . .	5,292	599	—	1,122	908	2,457	214
Belgium	1,517	—	159	315	136	456	—
France	1,531	10	—	114	571	581	208
Italy	1,782	2	—	—	105	346	—
Greece	180	1	—	—	—	—	—
Denmark	139	59	212	41	—	397	—
Holland	422	180	263	188	108	690	180
Norway	—	—	188	83	—	—	—
Switzerland . . .	521	—	—	—	174	120	—
Spain.	172	—	—	—	—	560	—
Sweden	197	8	—	—	63	—	—
Germany	1,975	—	—	3,186	—	904	289
Austria-Hungary . .	19	—	—	—	—	646	106

of cereals for stock-feeding to a much greater degree than for human food.

The difficulty of forming any reasonable estimate of post-war food requirements arises from the fact that the effective demand of necessitous countries is not capable of calculation on the old basis of consumption. Given a more or less established standard of living, and figures of home production plus imports for a number of years, it was not difficult to reckon approximately for any country the quantity for which in any year she was likely to be a competitor in the world's markets. Under the new conditions, however, new rates of consumption will be established, and there are many factors which combine to complicate any attempt to calculate these rates. Before the war food was universally plentiful and cheap, and the *per capita* consumption was, on the whole, relatively high. It could abili be said, for example, that the people of a la United Kingdom were in any sense elasort of food. But the consumption of food othe.head of Germany was estimated at nearly

20 per cent. more, and that of France 12 per cent. more. All nations are impoverished, and the collective purchasing power of the peoples is greatly diminished. Assuming that the rate of consumption in the United Kingdom is irreducible, it cannot be impossible for Germany and France to reduce consumption to the same level. If this were done, Germany, which imported 15 per cent. of her food, will, when her home production is restored, require to import nothing, and France would also be completely self-supporting. Several factors conspire to induce a lower rate of consumption. Diminished purchasing power, high prices, wider knowledge of food economy, habits of abstemiousness, all tend to reduce food consumption and to prevent wastefulness. On the other hand, there are factors tending to increase food consumption. Of the millions of men who have served in the nations' armies, the great majority have been fed more lavishly and well during the time of their service than ever before in their lives, and they will not willingly revert to their

old standard of living; and apart from this, there is the insistent and irresistible demand of the proletariat for a larger share in the good things of life, which in the first instance include a more plentiful and more varied diet. In any calculation of a nation's food requirements, the so-called "upper classes" are negligible. The millionaire as a rule eats less than the miner, and while there are hundreds of thousands of miners, there are very few millionaires. The food consumption of the moneyed and middle classes will undoubtedly be reduced in the future, but the wage-earners, who previously were the first to go short, in future will demand—and secure—a larger share.

Whether we consider the question from the point of view of theoretical requirements, or of effective demand, it is equally speculative, and he would be a bold prophet who would dogmatise. One thing, however, is certain amidst all uncertainties. The most insistent demand for any commodity can only be supplied to the extent that the commodity is produced. The people may

demand more bread, more beef, or more pineapples, but if the bread and the beef and the pineapples are not produced, they cannot be obtained. That is one of the simple, but eternal, verities, which is freely accepted by everyone, although its implication is not so universally recognised. The complexity of the economic system of civilisation obscures the simple truth, and it is often overlooked that the artisan is not only a consumer but also a producer of food. The way, and the only way, to ensure the production of more bread and more beef, is to produce more commodities to exchange for them. The maker of clothing, of boots, of tools, or of furniture, is producing food, because if he ceases to make these articles the man who grows the crops, and breeds and feeds the cattle, will only produce as much as he wants for his own consumption.

Some there are who believe that the world's food supplies are limited, not by the demand for them, but by the physical impossibility of producing more. The vision of a world perishing from starvation, owing

to inability to feed its inhabitants, has oppressed many of those who appear to suffer from dread of the remoter risks of life. They are like those who are haunted by the fear of the collision of the earth with a comet, or

> "Like one that on a lonely road
> Doth walk in fear and dread,
> Because he knows a frightful fiend
> Doth close behind him tread."

The increase of population beyond the means of subsistence has been a theoretical menace to the world for ages. It is of the same order as the menace under which the whole of animate nature lives. "Every organic being naturally increases at so high a rate, that, if not destroyed, the earth would soon be covered by the progeny of a single pair. . . . The elephant is reckoned the slowest breeder of all known animals, and I have taken some pains to estimate its probable minimum rate of natural increase; it will be safest to assume that it begins breeding when thirty years old, and goes on breeding till ninety years old, bringing forth

six young in the interval, and surviving till one hundred years old; if this be so, after a period of from 740 to 750 years there would be nearly 19,000,000 elephants alive, descended from the first pair."[1]

The present population of the world is estimated at 1,650,000,000. Although there is still no complete enumeration, it is probable that by present methods of computation this total is not very far wrong. For earlier dates in the world's history, we have to fall back on conjecture, and we have no means of knowing whether at any time the population of the world was larger than it is now. All we know is, that within the known period of man's existence on the earth, the hypothetical risk of over-population has been ever-present. Mr. G. H. Knibbs[2] calculates that the present population of the world might have been the descendants of one pair of human beings in 1782 years.

Without speculating on how the world would be fed if its population were doubled,

[1] Darwin, *Origin of Species.*
[2] Census of the Commonwealth of Australia, 1911.

it is sufficient for us to consider whether there is any sign that the limit of the world's food productive capabilities is being reached, whether, in fact, there is any imminent risk of famine from insufficiency of supplies and impossibility of increasing them.

It may be recalled that under the influence of the submarine scare in 1917, and with a singular failure to connect cause and effect, there was a violent outburst of pessimism, and the imminence of starvation, even if the war ended, was the theme of many arresting tongues and pens. One eminent writer, in describing post-war conditions, referred to "a calamitous general deficiency of some of the principal foodstuffs such as cereals and meat," and to "the serious world-shortage in foodstuffs"; another said that "the world is not now producing the quantity of food it requires," and a Labour journal said "the threatened world famine is upon us. . . . The workers have been slain by their millions in battle, and to the suffering and anguish of the civil

population is now going to be added that of a slow and painful death by starvation."

In December 1917, I ventured to call attention to some of the relevant statistical facts, to express a mild opinion that there were "some reasons for thinking that the prospects of food supplies after the war are not hopelessly gloomy," and to suggest that the difficulty of distribution and not the non-existence of supplies, was the real trouble.[1] But the public, at that time, so far as its opinions found expression, had made up its mind that the world was on the verge of starvation, and the natural fate of any one who declined to believe it, was to be dubbed an "incurable optimist."

The true inference to draw from the experience of the war, is that the food supplies of the world can be increased very rapidly, and that, given the necessary time and inducement, they are still capable of immense expansion. The immediate action of the food-exporting countries in sowing at the first opportunity, as already mentioned,

[1] *Journal of the Royal Statistical Society*, January 1918.

18,000,000 acres more wheat, is a salient fact. It demonstrates not only the possibility of extension, but also the readiness with which producers will respond to the probability of increased demand. It must be remembered that when growers had to make up their minds to increase their acreage, there was no certainty either of higher prices, and still less of access to their markets. No doubt the tradition that war brings high prices, counted for much in the mind of the Canadian, Australian or American farmer, without any exact calculations of the probable course of events. But up to the battle of the Marne there were many who shared the German belief that the war would be over in a few weeks or months, and even after that crisis, hopes of an early ending were common. Under these conditions, the economic stimulus to increase food production was dubious, while the risk that if the food were produced it could not be got to market, steadily increased. No doubt within the Empire, and at a later stage in the United States, the commercial

incentive was supplemented in a large degree by the desire to help in the struggle—to hold, as Lord Ernle said, the food-line, while their sons and brothers held the battle-line. This, however, does not affect the fact that the war demonstrated the elasticity of the world's resources of food.

The idea that food production had reached its possible limits, was founded on the belief that all the land suitable for growing bread-making cereals, had been already utilised. The extension of corn-growing in Canada is of course exceptional, and it may be true that in no other part of the globe can any comparable expansion now be anticipated. The figures for the Dominion, however, furnish so bold an example that they are worth recalling. Since 1870, the production of each of the chief cereal crops has been as follows, in thousands of quarters :—

	1870	1880	1890	1900	1910	1917
Wheat	2,090	4,044	5,278	6,947	16,510	28,966
Barley	1,437	2,106	2,153	2,778	3,606	6,461
Oats	5,311	8,812	10,429	18,937	30,674	49,196

As the population of Canada doubled between 1871 and 1911, a more illuminating record of progress from the world supply point of view is shown in the following statement of the number of acres of wheat and oats, and of farm live-stock per 1,000 of population :—

	Wheat	Oats	Cattle	Sheep	Pigs
	Acres	Acres	No.	No.	No.
1870	472	—	711	855	354
1880	561	—	813	729	279
1890	564	826	852	534	358
1900	794	1,008	1,038	467	428
1910	1,230	1,200	905	302	504
1917	1,764	1,592	—	—	—

The total number of cattle in Canada more than doubled, and the number of pigs nearly trebled in forty years, but sheep declined by about 1,000,000. During the same period there was a great extension of dairying, and the annual exports of cheese increased from 13,000 tons to 79,000 tons.

Canada has not yet reached the limits of her expansion in regard to the area which can be placed under cultivation, and she has

hardly yet begun to develop the possibilities of the land already under crops. In the older parts, such as Ontario, more intensive cultivation of the land has begun to show results on a broad scale. In thirty years the average yield per acre of fall wheat and of oats has increased by 3 bushels, of spring wheat by 4 bushels, and of barley by $5\frac{1}{2}$ bushels. In Manitoba there has as yet been no progress; and, indeed, there has been a decline in the average yield due to the exhaustion, without return, of the original fertility of the land. But inasmuch as the average yield of wheat for the Dominion is under 19 bushels per acre, as compared with 32 bushels in the United Kingdom, and 31 bushels in Germany (before the war), the potentialities of increasing the output in Canada are apparent.

The maintenance or extension of output depends obviously on the prospect of a remunerative market. The United States in 1919, had 71,500,000 acres under wheat, or 11,000,000 more than in any previous year. There were also 6,600,000 acres

under rye, or three times the area under that crop in 1912. It is very unlikely that these acreages will be maintained, but the fact that they have been reached is at least an indication of possibilities. All over the world, indeed, war conditions have revealed a potentiality of food production hitherto little recognised. The share of Brazil, for example, in providing the beef supplies of the future cannot yet be measured, but it is quite probable that it will before long challenge the position of Argentina, while South Africa will shortly become a serious competitor in the same market. Mesopotamia, once the granary of the East, may again help to feed the world, while Australia has shown that she can take a substantial part in providing wheat, as well as meat and wool. At the present time, to speak of the development of Russia and Siberia may appear ironical, but in calculations of the world's food reserves they must sooner or later be reckoned.

In short, so far from the war having shown any grounds for fears of imminent

world shortage, it has disclosed potential resources which are ready for development, and demonstrated that for any period in the future which directly concerns the present generation, ample supplies of food are assured under an adequate stimulus to production. The adequacy of the stimulus, expressed in terms of price, is beyond the scope of this discussion. One factor may, however, be referred to. The margin between the price given by the European consumer, and that received by the oversea producer has been greatly increased by the cost of transport. Ocean freights rose to extravagant heights. Before the war, wheat was carried from New York to Liverpool for 1*s.* 9*d.* per quarter; in November 1918, the freight paid by the Government for foreign steamers was 50*s.* per quarter. From Buenos Ayres to Liverpool the freight was 2*s.* 2*d.* per quarter in June 1914, and 48*s.* 3*d.* in November 1918. Since then they have fallen very considerably, the rates in September 1919, being 8*s.* 6*d.* from New York, and 13*s.* 5*d.* from Buenos Ayres.

The recovery of the world's shipping from the heavy losses of war has been rapid. It is partly accounted for by the fact, which was sometimes forgotten, that the work of replacement went on continuously. It was most active in the United States, and to a lesser degree in Japan, but even in the United Kingdom, notwithstanding the strain upon our resources in all directions, the amount of merchant shipping built and launched during the war was very substantial, although below the pre-war level. The record amount of tonnage launched in the United Kingdom before the war in a single year was 1,932,000 tons, in 1913. In 1916 it fell to 608,000 tons, but in 1918, when the demands of the Navy on our shipyards had relaxed a little, the total rose to 1,348,000 tons. In July 1914 the gross tonnage of merchant shipping in the world was 49,100,000 tons, and in July 1919 it was 50,900,000 tons. Taking merchant steamer tonnage alone, the total in July 1914 was 45,400,000 tons, and in July 1919 47,900,000 tons. I have quoted these

figures of shipping mainly from a memorandum by Sir James Wilson, who estimated that by the end of 1919, the merchant steamer tonnage of the world would amount to 50,000,000 tons, or nearly 5,000,000 tons more than before the war.

No difficulty, therefore, in obtaining food supplies need be anticipated from a lack of the means of ocean transport, especially as for some time to come the total bulk of commodities produced and available for shipment must be less than before the war. The efficiency of tonnage, however, depends on the handling of it, and unfortunately delays in the ports have very seriously reduced the average number of voyages per vessel, and have thus tended to diminish the supply of effective shipping space, which the energy and enterprise of shipbuilders and shipowners have provided for the world's use.

CHAPTER II

BRITISH AGRICULTURE

"The despotism of custom is everywhere the standing hindrance to human achievement."—JOHN STUART MILL.

THE extent to which the United Kingdom supplied itself with food, and the result of the efforts made during the war to increase the amount have been described. The consideration of the future of production in this country, involves a discussion of the probable reaction on the course of British agriculture of factors—economic, political and social—all of which are uncertain.

From what has already been said, it is, I hope, clear that in my judgment there is no need to apologise for British agriculture, either before or during the war. There is, nevertheless, frequently evident a disposition on the part of the public to assume that there is something rotten in the state of farming in the British Isles,

and that in other countries farmers are more efficient, and are more successful in utilising the land to the best advantage. It is a truism that there are many bad farmers, but they are to be found in all countries, while it is also true that inefficient persons are common in all trades and professions. But the generalisation that agriculture in this country is on the whole less productive than in other countries under comparable conditions, is, to say the least, questionable.

One consideration, sometimes overlooked, is that in making international comparisons of crops, it is necessary to take approximately equal areas. For example, the average yield of wheat before the war was in Germany 31 bushels per acre, and in France barely 20 bushels. But, whereas, in Germany the average was obtained on 5,000,000 acres, in France it was obtained on 16,000,000 acres. A comparison of five European countries of approximately equal total area, showed the pre-war yields per acre of the three main cereals, and of potatoes to be as follows :—

	Wheat	Barley	Oats	Potatoes
	Bushels	Bushels	Bushels	Tons
United Kingdom .	32·7	34·7	42·7	5·8
Austria . . .	19·0	24·6	28·9	4·2
Hungary . .	17·4	21·9	24·1	3·1
Italy . . .	15·3	16·3	24·7	2·3
Prussia . . .	31·8	37·2	45·2	5·5

A comparison for the same countries of the number of live-stock per 1,000 acres of land under cultivation, gave the following results :—

	Cattle	Sheep	Pigs
United Kingdom . .	255	619	85
Austria	201	53	141
Hungary . . .	168	196	174
Italy	121	218	49
Prussia	229	79	299

It will be observed that except for a slight inferiority to Prussia, in regard to barley and oats, the United Kingdom stood highest in the scale of agricultural production.

It is true that in output per acre the smaller countries which practice more intensive farming — Belgium, Denmark and Holland—surpassed this country generally

in the average yield of crops, and also in the number of cattle and pigs per 1,000 acres, although the United Kingdom was easily foremost in sheep.

The test, however, of economic production, is the output per unit of energy employed. The higher production in Belgium and Holland was obtained by an excessive amount of labour per acre, as compared with this country. In the United Kingdom 115 agriculturists per 1,000 acres of arable land were employed, whereas in Belgium 218, and in Holland 280, were required to secure a not very much greater return. In Denmark production was more economic, the man power expended being only 81 per 1,000 acres, but this was bettered in the Eastern division of England (an area of approximately equal size), where no more than 76 men per 1,000 acres of arable land were employed.

Food supplies, in the economic sense, consist of the surplus available after the producers have provided for their own sustenance, and consequently the fewer the number

of persons engaged in producing a given quantity of produce, the larger the surplus and the greater the profit. The conclusion is that, judged by the economic test, the British farmer was more skilful and successful than the foreign farmers with whom he was sometimes unfavourably compared.

The figures above quoted relate to farming as ordinarily understood, but for maximum output from the land, whether per acre or per man, the results of intensive cultivation should be considered. Unfortunately the statistics are insufficient and defective. It is estimated, for instance, that there are at least 2,000 acres of crops grown under glass in this country, and that the capital expenditure (on a pre-war basis) represented, is £4,500,000. It is evident that the food production per acre so cultivated must be very great. Thus, an average crop of tomatoes is from 30 to 35 tons per acre, and of cucumbers 60 to 70 tons. The approximate weight of grapes grown under glass in England is estimated at over 2,000 tons. The production of fruit and vege-

tables, other than under glass, has increased very greatly in Great Britain. The area returned as under small fruit on holdings of an acre or more, doubled in thirty years, and was before the war about 80,000 acres. The total value of vegetables and fruit produced on a commercial scale in Great Britain was estimated in 1908 at £16,000,000, and this took no account of the produce of allotments and private gardens.

British agriculture has been under the searchlight during the war, and its defects and limitations have provided a theme for much public discussion. The development of agriculture, and the increase of home production, are agreed by all parties to stand in the forefront of post-war problems. Various means are proposed for the attainment of these desirable ends. Many of them are evolved from the fertile brains of those who advocate them, and others are derived from a more or less informed belief in methods which have succeeded, or appear to have succeeded, in other countries. But, after all, this is an old country, and it is not the first

time in its history that agriculture has been the object of public solicitude, and the target for public criticism. British farming to-day (or rather up to 1914) was what varying circumstances had made it. It had survived many crises and fits of depression. Over thirty years ago, in a long-forgotten essay, written at a time when the "ruin of agriculture" was believed by many to be imminent, I recalled Macaulay's description of 1692—"The price of the quarter of wheat doubled. The evil was aggravated by the state of our silver coin, which had been clipped to such an extent that the words pound and shilling ceased to have a fixed meaning. . . . The labouring man was forced to husband his coarse barley loaf. . . . The necessity of retrenchment was felt by families of every rank." And Byron, in 1822, wrote:—

'Lately there have been no rents at all,
And 'gentlemen' are in a piteous plight,
And 'farmers' can't raise Ceres from her fall:
She fell with Buonaparte. What strange thoughts
Arise, when we see emperors fall with oats!"

These recollections have some relevance

to the present situation, in that they mark periods when the state of agriculture engrossed the attention of the nation, and when, also, its future was thought by farmers to be more or less hopeless. It may be added, also, that any student who consults the rural literature and the parliamentary proceedings of a century ago, or of later periods of depression, such as those of the early "eighties" and mid-"nineties," will find prototypes of many of the proposals for the regeneration of agriculture, which now re-appear as original efforts of constructive genius.

While, as suggested above, British farmers, judged by a reasonable standard of economic production, have on the whole no reason to be ashamed of their record, it is admitted that the total quantity of food produced might be substantially increased. Except for the possible reclamation of relatively small areas, there is no chance of appreciably increasing the land devoted to farming. The area of land farmed has remained practically the same, notwithstanding encroachments upon it by the extension of urban requirements,

for the past thirty years at about 32,000,000 acres in Great Britain. The proportion of the total area of the United Kingdom devoted to agriculture is 61 per cent. in addition to 16 per cent. of "rough grazings" mainly used as sheep-runs. The agricultural area is about the same proportion as in Austria, Belgium and Prussia, but considerably less than in Denmark, and rather less than in Holland. The number of farmers has also remained almost unchanged since 1881, at 280,000. This, it should be noted, is the number who returned themselves as farmers or graziers at the census, and may be assumed to represent the number of persons who depend wholly or mainly on the occupation of land as their means of livelihood. The number of holdings of more than one acre in Great Britain was 500,158 in 1917, but of these 329,168 were not more than 50 acres, while 101,989 were not more than 5 acres in size. Allowing for a small proportion of persons who occupy more than one holding, it would appear that what may be fairly described as the "farming class" does

not number more than about 300,000, or with their families about 1,500,000 persons. To arrive at the agricultural population—*i.e.* those who live by the land—nearly 30,000 farm bailiffs and foremen must be added, as well as the agricultural labourers who before the war numbered 752,000. At present the number of labourers has not reached the pre-war level, nor under existing conditions is it likely to do so. In round figures it may be reckoned that about 1,000,000 persons are engaged in the cultivation of the land in Great Britain, representing with their families a population of from 5,000,000 to 6,000,000, or about 13 per cent. of the total population of the country.

In this connection must be recognised the progressive industrialisation and consequent urbanisation of the people. The dwellers in towns steadily increase while the inhabitants of the country diminish. The tendency is shown for England and Wales in the following figures, taken from the Report of the Registrar-General on the Census of 1911, giving

the population in urban and rural districts respectively :—

Year.	Urban Districts.	Rural Districts.	Per Cent. of Total Population.	
			Urban.	Rural.
1881	17,636,646	8,337,793	67·9	32·1
1891	20,895,504	8,107,021	72·0	28·0
1901	25,058,355	7,469,488	77·0	23·0
1911	28,162,936	7,907,556	78·1	21·9

The figures do not in themselves indicate "rural depopulation," or any marked tendency on the part of persons living in the country to desert it for the towns. The normal increase of population must, in the nature of things, be absorbed in the towns, where alone there are expanding industries and increasing demand for services. Under any system of agriculture there necessarily comes a stage when the land is employing the maximum number of persons which the system requires. This is equally true under a system of ranching, of mixed farming, of small holdings, or of intensive cultivation. When that point is reached the population

of the district remains stationary, and cannot absorb the natural increment. Industrial enterprise has no such limit, the possibilities of expansion being defined, not by any physical difficulty in building and equipping factories or workshops, but by the demand for the goods which can be produced. Long after the agricultural land of the country is filled up the increase of population may be absorbed in the towns.

In Great Britain the system of agriculture which existed before the war employed 752,000 agricultural labourers. Changes in the system during the preceding thirty or forty years had involved a diminution in the number so employed. The following are the returns of agricultural labourers at each of the last four censuses, with the number per 1,000 acres of land farmed :—

Year.	Number.	No. per 1,000 acres.	Decrease in each Decade.	Decrease Per Cent.
1881	1,017,044	31·6	—	—
1891	898,232	27·3	118,812	11·7
1901	724,314	22·3	173,918	19·4
1911	751,927	23·4	*27,613*[1]	*3·8*[1]

[1] Increase.

It should be noted that the census of 1901 was taken during the Boer War, and the figures for agricultural labourers were reduced owing to the absence of militia battalions and other disturbing causes. I estimate that the number returned would have been some 50,000 higher under normal conditions, and consequently the decline between 1891 and 1901 was less, and the apparent increase between 1901 and 1911 was fictitious. There was, in fact, a continued, though less rapid, decline.

This reduction by 265,000, or 26 per cent., in the course of thirty years is commonly attributed to the shrinkage of arable land and the extension of grass land. The area of land under the plough was, in fact, reduced by 3,000,000 acres during this period, but this was not sufficient by itself to account for so large a decrease in the number of men employed, especially when it is remembered that of the arable land in 1911 a much larger proportion was devoted to the growth of fruit and vegetables, and to other forms of intensive cultivation which require more

manual labour than ordinary farm crops. At the most, the conversion of 3,000,000 acres of arable land to pasture would not displace more than 100,000 labourers, leaving 165,000 to be otherwise accounted for.

The facts are somewhat complex. In the first place, the census returns make no allowance for continuous employment. A man describes himself as an agricultural labourer because that is his sole, or main, occupation ; but in the old days large numbers of such men were only employed seasonally, and were idle for a considerable part of their time. The general practice of "standing off" men in wet weather enabled the farmer to employ a maximum number in fine weather, or at certain seasons, and to dispense with them when work was slack. If the figures are taken back a little earlier, and the area of cultivated land added, this fact appears evident in the statistics (see p. 150).

In the earlier period there was, in fact, always a large surplus of labour in the villages, but as time went on facilities for transport increased, and the rural outlook

Year.	Cultivated Land.	Agricultural Labourers.	Labourers per 1,000 acres of Cultivated Land.
	Acres.	No.	
1851	34,000,000 [1]	1,455,213	43
1861	33,000,000 [1]	1,364,908	41
1871	30,839,000	1,142,347	37
1881	32,212,000	1,017,045	32
1891	32,919,000	898,232	27
1901	32,417,000	724,314	22
1911	32,095,000	751,927	23

widened. Labour became more mobile, men passed from the country which offered so meagre a living, and the number of agricultural labourers accordingly fell. Partly under this pressure employers gradually tended to standardise their staff, so as to keep the men in regular employment, and the practice of "standing off" in wet weather had become almost obsolete in recent years, when the Agricultural Wages Board gave it a *coup de grâce*. At the same time, farmers not only adopted in a steadily increasing

[1] The Agricultural Returns were not collected until 1866, and the figures for 1851 and 1861 are accordingly estimated. The acreage of cultivated land returned in 1871 was probably under stated.

degree labour-saving implements and appliances, but a better-educated and more intelligent generation arose who gave more attention to the organisation and supervision of labour — whether mechanical, horse or manual—on their holdings.

The persistence of the old tradition which regarded employment in agriculture as the least skilled, and therefore the worst paid, of all occupations, began to fail when the farm-worker had access to other and better-paid employment, which was a strong inducement for the younger and the more enterprising men to leave the land. Unfortunately, the same bad tradition had imbued farmers, especially of the older generation, with an inability to realise the changed conditions. The idea of offering higher wages—except in isolated cases to individual men—when other industries competed with agriculture for labour, was slow to enter the mind of the average farmer, and any suggestion of an increase usually met with obstinate hostility. The fault lay not with all farmers, but it was practically impossible for a few to

raise wages in a district without the general consent of all, and the attitude of the majority was decided by the mental outlook and equipment of the average. It must be admitted that, while within the limits of his business, in the practical management of land and stock, and in buying and selling in the markets, the average farmer is, as a rule, highly competent; in political, sociological or economic matters he usually stands on a lower level than the rest of the capitalist class to which he belongs.

In any forecast of the future of British agriculture, it is desirable to be clear what is expected of it. Shortly stated, the agricultural land of a country may be developed for one of three main objects—profit, production or population.

It is a truism to say of agriculture as of any other industry, that a man embarks upon it and sinks his capital in it, with the view of making a profit. There are some exceptions to this generalisation in the case of farming, for men do, in fact occupy and cultivate farms either—as in the

case of some public-spirited landowners (of whom Sir John Lawes was a notable instance)—to experiment or demonstrate for the benefit of their fellows, or, as is not uncommon, as a form of recreation. But generally speaking, a man takes a farm with a view of using the land in such a manner as will give him the greatest remuneration for his services and capital. Under modern conditions of tenure he is, as a rule, free to do anything he thinks will pay him best. The old restrictive covenants were objectionable and sometimes unintelligent, but the principle underlying them, the preservation of the natural fertility of the soil, was sound. The occupier to-day is unhampered, and he therefore grows such crops, keeps such stock, and generally manages the farm in such a manner as is best suited to give him, under the conditions of soil, climate and situation, the best financial return. Up to a point it is his interest to produce large crops from the land, and the maximum output of meat and milk from his stock. But that point is fixed by the

law of diminishing returns which governs farming operations. Lord Ernle, in an article[1] published shortly before he took office as Minister for Agriculture, quoted a Rothamsted experiment where the application of 200 lbs. of a complete fertiliser to a wheat crop, gave an increased yield of 18 bushels, another 200 lbs. increased the yield by 8 bushels, but a further 200 lbs. gave an increase of only 1·6 bushel. It is evident, therefore, that the attempt to obtain maximum output, is governed by entirely different conditions from those which obtain in industry, where increased output generally means lower cost per unit produced.

This point of view is indicated in a reasoned statement prepared in September last by the National Farmers' Union, for the Royal Commission on Agriculture :—

"The mistake which brought disaster to so many men in the eighties and nineties was their attempt to keep up their production in the face of a falling market. 'High farming is no remedy for low prices,' and

[1] *Edinburgh Review*, October 1915.

thirty years of low prices have burned this lesson deep into the minds of most farmers."

The land of this country will always find men prepared to cultivate it. The "ruin of agriculture" which is so glibly talked about, means the ruin of a particular system of agriculture, or the ruin of a number of the present occupiers of land. Agriculture in some form or other will be carried on, for it is inconceivable that a nation of 46,000,000 should not utilise its agricultural land to grow food of some kind. The real question is what kind of food, and in what quantities.

It is not very difficult to foresee the lines upon which British agriculture would develop without State intervention, or artificial stimulus. The products will be in the first place those for which the climate and the soil are best suited, subject to the general rule that products which will least bear the charge of long transport, or will deteriorate most from delay in reaching the consumer, will have a preference. Up to the limit of the demand, these products will be those

which on all soils and in all situations in any way suited to them, will be primarily produced. In other words, milk, butter, fruit and vegetables, will be primary products of British agriculture, while meat production will hold its own so long as it maintains its present superiority in quality. Corn will be grown mainly as subsidiary to the production of the primary products. It does not necessarily follow that arable farming will be greatly diminished, although land compulsorily, and in some cases uneconomically, ploughed up during the national emergency, will mostly revert to grass.

In the pursuit of profit on these lines, it is not certain whether, in the long run, the total food production of the country would be increased or decreased. In the first instance, no doubt there would be a further diminution of the land under the plough, and as the total food produced on a given area of arable land will almost always be greater than that of an equal area of grass land, whatever use is made of it, production would *pro tanto* be reduced. As

the practice of using arable land for meat and milk production became more general, it might be that some recovery of arable cultivation would take place.

In speaking of the development of agriculture without State intervention, it is assumed that under any circumstances the State will maintain a Department of Agriculture, and provide in fuller measure than heretofore all possible assistance in the way of research, education, demonstration and information. Very much has been done in this direction—more, indeed, than is generally recognised. The system of agricultural colleges, and the arrangement by them, each in its own area, of schemes suitable to its locality, of educational and experimental work, was not fully developed until shortly before the war, and has naturally been hindered. Such a system takes time to show results, for it is the farmers of to-morrow, more than the farmers of to-day, who will assimilate the lessons which science can teach. The average farmer, with all his inherited aptitude for the cultivation of the soil, is not receptive,

and the younger generation will be far better equipped for the struggle of life on the land, wherever the influence of these centres of agricultural education can penetrate.

The lines above suggested as those upon which agriculture, if left to itself, will develop, are in fact those upon which it had been for a long time proceeding before the war. Cereals had already been dethroned from the pinnacle of supremacy which they once occupied. In value of output, meat was easily first, dairy products second and cereals third. The estimated value of home-produced meat (including pig-meat), just before the war, was about £100,000,000; of milk, cheese and butter nearly £60,000,000, and of corn crops £43,000,000. Fruit and vegetables, as already mentioned, were grown commercially to the value of £16,000,000, and were steadily increasing.

The interest of the nation, as distinct from the class-interest of farmers, is two-fold:—

(*a*) to secure the maximum quantity of food from the land, and

(*b*) to maintain the maximum number

of persons on the land, as the source from whence the whole nation derives physical vigour.

There are two important reasons usually given for producing the largest possible proportion of the nation's food supply at home, viz. reductions of imports and security against starvation. Under present conditions, and until our industrial system regains something like its old measure of production, the reduction of imports is obviously of great importance to the financial rehabilitation of the country.[1] Unless, and until, we produce sufficient commodities to pay for them, every ton of goods we buy is increasing our national indebtedness, and further impairing our national credit. From that point of view, drastic State action, either to reduce the consumption of food or to increase its production, might be

[1] In considering reduction of food imports, two points —bulk and value—have to be regarded. For saving shipping it is preferable to import those commodities which occupy least space. Thus wheat and maize occupy about 50 to 60 cubic feet, butter and cheese about 70 cubic feet, and meat from 100 to 120 cubic feet per ton.

readily justified. Such measures would be temporary, with the view of meeting what we may well hope is a transition period of financial stress. When the balance of trade approaches equilibrium, restriction of imports becomes, from this point of view, no longer necessary or desirable, as obviously our capacity to sell is limited by our willingness to buy.

The increase of food production as an insurance against the risk of famine, is a more complex proposition. This is an old subject, which was examined in considerable detail by the Royal Commission on Food Supplies in time of war, but undoubtedly it now presents itself in a new aspect. It was never assumed that if we were at war with a great naval power, our food supplies would reach us without interruption; a certain proportion of loss and capture of food cargoes was anticipated, but it was assumed that the fleet would be powerful enough to prevent anything like a complete blockade of these islands—an operation indeed, which our long coastline rendered

almost inconceivable. So far indeed, with the knowledge of sea-warfare then possessed by even the highest naval authorities, this view appeared reasonable, and it was, in fact, justified. The British Navy immediately on the outbreak of war, established a command of the sea which was practically complete, and was, at any rate, quite unprecedented in the annals of the sea. But, while Britannia ruled the waves, she found her supremacy challenged under them. The menace of the submarine had been foreseen, but its rapid development was as little expected as was the almost equally rapid development of measures of defence against its attacks. In the case of all new weapons of attack in war, methods of defence are immediately devised, and the lesson of history is, that although for a time the new weapon is successful, the defence in the long run defeats it, and new weapons have to be adopted. Whether in the case of the submarine there is any indication that the turning-point has been reached, and that the defence in future may be reckoned on

to defeat it, involves facts and speculations which the present writer is quite unqualified to discuss. What to the uninformed lay mind seems clear, is that in the end the human factor is decisive. That men, urged by a sense of duty and patriotism, will cheerfully take appalling risks, the war has demonstrated. Human courage has never, in the world's history, risen to greater heights of daring. But, except in rare instances, and at some extreme demand for self-sacrifice, man will not face an enterprise without at least "a fighting chance" of coming through alive. Service on a submarine presents little chance of escape if the craft is destroyed, but the chance of not being caught was fairly high. If the chance of being destroyed rises above a certain point, men will refuse to take it, and the submarine will, in its present form, become obsolete as a weapon of attack.

We may, however, assume, for the sake of argument, that while a complete blockade of these islands still remains improbable, the risk of interference with our oversea

food supplies has greatly increased, as vessels now have to face submerged as well as surface foes, in addition to attacks, possibly even more formidable, from the air.

Our faith in the abolition of war is being sorely tried, but many of us still "faintly trust the larger hope," which is embodied in the League of Nations. We cannot, however, conclude that our sea-borne food will suffer no risk of interruption if the world remains at peace. A strike of seamen or of dock labourers, although less prolonged, might for a time be more effective than war in stopping vessels from reaching our shores.

If the nation wishes to insure, it is necessary to decide not only the form of the insurance, but also the particular kind of food in regard to which the risk is greatest. It has hitherto been assumed that if supplies of wheat could be assured, all would be well, but the experience of Germany has shown that a deficiency of milk and fat will lower the vitality and weaken the *moral* of a nation scarcely less

effectively than a shortage of bread. The war has also shown that there are many possible breadstuffs, but no substitute for fat.

The nation was self-supporting in milk and potatoes before the war, and remains so now. At the end of the war the United Kingdom was producing about 2,000,000 tons more cereals—wheat, barley and oats—than in 1913. If the production of 1918–19 were maintained, and the whole of the cereals were made into bread, the population could be fed entirely on home-grown grain. This assumption is, of course, practically impossible. The use of barley for beer may be substantially reduced—as it was—and both oats and barley may be utilised to some extent for the loaf. But both these cereals are needed in large quantities for the maintenance of live-stock.

In 1918 there were in the United Kingdom 21,221,000 acres under arable cultivation, and about 50 per cent. of this area was under corn crops. Before the war the

arable area was 19,414,000 acres, of which 39 per cent. was under corn. It is clear, therefore, that the appeal for more cereals induced farmers to break their rotations, and to put a larger proportion than usual of their arable land under corn. This, however, was an emergency measure, and it must be assumed, therefore, that with an arable area of, say, 21,000,000 acres, the acreage of corn would not be more than 8,500,000 acres. Of this on the pre-war basis about half would be under oats, and the other half would be equally divided between wheat and barley. This acreage of wheat in an average harvest would give a crop of 8,500,000 quarters, of which, after deducting seed and tail corn, not more than about 7,500,000 quarters would be available for the loaf. On the basis of our present population, and with a normal loaf the United Kingdom consumes about 34,000,000 quarters per annum, so that we should still need to import 78 per cent. of our requirements. It appears, therefore, that with 21,000,000 acres under arable cultivation,

our dependence on oversea supplies for wheat would be very little reduced, and that home resources would not furnish much more than three months' supply. In the case of another prolonged war, the fact that so much more land was already under the plough would, however, provide a greater reserve, as it could be more quickly devoted to corn-growing.

It is well to recognise that from the point of view of having a reserve stock of wheat in the country, as an insurance against the abrupt and complete stoppage of oversea supplies, nothing less than a crop equal to six months' consumption would materially affect our position. The late war broke out just before harvest, and we had, therefore, the whole of our home crop in stock, and with the commercial stocks then in the country, we could have lived for four or five months on a wheaten loaf without imports. But if we were suddenly blockaded in March, even if we had harvested six months' supply in the previous autumn, we should have only enough wheat in the country to pro-

vide half-rations of bread for about four months. If the previous harvest had been very good, we should be slightly better off, but if it had been very bad, we should be so much worse off.

To secure this position, however, the arable land would need to be increased by nearly 8,000,000 acres above the level reached in 1918, and having attained this extension—which is in fact not reasonably possible—the normal increase of population would very quickly upset all the reckoning.

The argument for an extension of the arable area does not rest alone, or indeed, mainly, on security against famine, although any increase in food production at home helps, in some measure, in that direction. A substantial increase in food production, however, might be secured by augmenting the output from the present area. The real national necessity is an increase in the population engaged in the cultivation of the soil, and deriving their subsistence directly from it. The conception of an industrialised and urbanised people is

appalling. To imagine an island which was all London, or all the Black Country, is to conceive conditions of human life which would be unendurable, and a body politic which was hastening to decay. The maintenance on the land of at least a substantial proportion of the people is a social necessity, and the larger that proportion is, the better for the physical, moral and mental health of the community. Agriculture is the phylactery of a nation. It is the recuperative and regenerative agency which sustains the soul of mankind, and a people which has no roots in the soil, and throws out no tendrils to the open country, will become soulless and effete.

The density of employment on arable land varies greatly according to the system of cultivation and the crops grown, but under any circumstances, land which is under tillage must employ at least three or four times as many individuals as grass land.

The low ratio of man-power to production, which from the profit-making point of view is an indication of successful farming,

is from the national point of view a condemnation of the system of agriculture. The agricultural policy of this country for ten or twenty years prior to the war had recognised, by legislation and administration directed to the provision of small holdings and allotments, that increased population on the land was of vital importance, and that the State should take special measures to promote it. Something also had been done to recognise in principle that research and education were the primary factors in securing increased production. Development along these lines must remain a foremost item in the programme of any future policy, whatever may be added thereto.

Neglect of our greatest industry has been a stereotyped accusation against successive Governments for the past forty years, but it is not altogether well-founded. In some respects, as, for instance, in the elimination of animal diseases and the prevention of their introduction, the State has been markedly successful; in other respects, such as the multiplication of small holdings, it has been

ineffective, while in the encouragement of research and the provision of facilities for agricultural education, it has been laggard. The estimates for 1919–20 showed, however, a long step in advance, the amount allocated in the vote of the Board of Agriculture and Fisheries for agricultural education and research being increased by over £300,000, and that for small holdings by £100,000, while £250,000 was provided for Land Drainage and Reclamation. A sum of nearly £1,000,000 was added to the Board's vote, and substantial increases were also made to the estimates for the Scottish and Irish Departments.

If the interest of the State in agriculture is to be measured by the amount of public money devoted to it, the United Kingdom may claim a high place. The provision made by Germany before the war for fostering agriculture is frequently cited as a model for this country, while the large sums appropriated to the United States Department are also quoted. It is not easy to make exact comparisons, but the budget of the United

States Agricultural Department for 1919–20 was about £7,000,000, while the votes for the three Agricultural Departments of the United Kingdom for the same financial year, amounted to £2,700,000. The latest figures available for Germany are for 1910, and in that year the agricultural budget amounted to £4,000,000. On these crude figures it might appear that we still lagged behind, but when they are fairly compared in relation to the interests involved, they tell a different story, as is shown below :—

	Per 1,000 of Total Population.	Per 1,000 acres.	
		Total Area	Cultivated Land.
	£	£	£
United States .	68	4	14
Germany . .	63	31	47
United Kingdom .	60	36	60

In relation to agriculture, as measured by the extent of land farmed, the public expenditure of the United Kingdom, therefore, is much higher than in America or Germany. Direct expenditure from the national

Exchequer does not, however, in any of the countries represent the total amount spent on Agriculture. In the United States very large sums are also spent by the various States, and in Germany much of the expenditure on agricultural education is provided through Chambers of Agriculture with special rating powers. In Great Britain also some expenditure on Agriculture is provided by local authorities, and also by voluntary associations, such as the Royal Agricultural Society the Highland and Agricultural Society and similar societies to whom collectively the progress of agricultural practice and science, and particularly the improvement of live-stock and implements, are very largely due.

The agricultural policy to which the nation is committed as the result of the war, is embodied in the Corn Production Act, 1917, the Land Settlement (Facilities) Act, 1919, and the Agriculture (Councils, etc.) Bill. The main principles therein laid down, are (1) the guarantee to farmers of minimum prices for wheat and oats; (2) the establishment of a minimum wage for farm workers;

(3) the restriction of the raising of farm rents; (4) the enforcement of proper cultivation; (5) the compulsory acquisition of land for small holdings and farm colonies, especially for the settlement of ex-service men.

The lines upon which this policy is based, involve a notable change in the relations of the State to the agricultural community. As regards the farm workers, it may be said that the Corn Production Act applies to them a general principle of regulation of wages which is, in some form or other, common to many other industries, and that if they were not provided for in an agricultural policy, they would be dealt with in a labour policy. The occupiers of land, however, are exceptionally treated. The two main pillars of the policy are the insurance of farmers against a disastrous fall in corn prices, and the supervision by the State of the farming of the country. It may be said that guaranteed prices are only a reversion to the principle embodied in the Corn Laws, which had for their object the

encouragement of corn-growing and the extension of arable land. It is, however, a new departure in agricultural politics for the State to assume the responsibility for the proper cultivation of every holding "according to the rules of good husbandry," with power to evict the occupier and carry on the farm under Government control. The State thus, without acquiring the ownership of the land, steps into the position, and exercises the functions of landlord—an innovation in the land system of the country of which the implications cannot at present be foreseen.

CHAPTER III

THE HUMAN FACTOR

"Nothing is so contrary to fact as the common opinion that the agricultural labourer and his family are stupid and unintelligent."—RICHARD JEFFRIES.

THE supply of food is an economic question, in the discussion of which capital and labour as essential to production and distribution, may be treated as abstractions subject to certain general laws and tendencies. But in agriculture the human element, for which capital and labour are generalised descriptions, counts for much more than in most industries. All occupations tend to "run in families," but in none is heredity so strong an influence as in the cultivation of the soil. In this country, at any rate, farming families attached, sometimes for hundreds of years, to the same parish may be found in all districts, while labourers have in numberless

instances still deeper roots in their native village.

> His dead are in the churchyard—thirty generations laid.
> Their names were old in history when Domesday Book was made.

This hereditary association with the land, and the traditions which come down from generation to generation, coloured and distorted oftentimes by long transmission, result in an instinct of possessive rights which is to be found latent in the peasantry of all countries, and in some cases has stimulated fierce uprisings. The exciting cause of a rising of the peasantry, as in the French Revolution and our own Peasants' Revolt, is oppression, but at the root of it lies the conviction of an equal right in the land with those who exercise ownership. The watchword of socialism—"When Adam delved and Eve span, who was then the gentleman?"—was coined more than 500 years ago on the English countryside. For the past century or more, there has been added to this vague instinct of possession, a more definite feeling

of dispossession. Throughout the greater part of rural England, the belief is firmly held that the land belonged to "the people" before the Inclosures, and was then taken from them. It is easy for those who have studied the records to argue that there is very little historical foundation for this belief, that the inclosure of the commons was an economic necessity, that the existence of common rights was a hindrance to the progress of agriculture, that the rights of common were of little value, that compensation to their then owners was given on their abolition, and that in any case a right of common is not, in fact, ownership of land. No argument or historical evidence will disturb the conviction that the people have been deprived of the land they once possessed.

It is on this stubborn tradition that the advocates of the nationalisation of the land, base their appeal to the agricultural labourers, and from this they receive widespread support. No observer of the course of events can fail to recognise, if he candidly faces facts without allowing his sight to be obscured

by his own predilections, that this issue is one which will come before the nation for decision in the not far-distant future. For the time being, the agricultural labourer is mainly interested in the immediate improvement of his economic position. In the short space of two years, he has made a signal advance. He has shared with other workers in the general raising of the level of wages which has been one of the results of the war—a rise which may be admitted to be the inevitable corollary of the rise in the cost of living, without prejudice to the discussion whether it was greater or less than was requisite. But the alteration in the labourer's position has been more than is expressed in terms of money. He has secured the general recognition of his right of organisation and collective bargaining, his claims to a certain amount of leisure have been admitted, and he can now no longer be described, by any flight of oratory, as a serf or a drudge. This change in his position and outlook has been too sudden to allow its consequences to be realised, or fully felt. At present the older

men are a little dazed. It will take some time for the rural mind to adjust itself to the new conditions, though the older generation is receiving a new and equally disturbing leaven in the younger men who are returning after having played their part in the war. They bring back to the countryside minds which have been widened and stimulated by adventures and experiences such as a long life-time of humdrum existence could not dimly conceive. Their three or four years of Europe, or of other fields of fighting, have been more eventful than "a cycle of Cathay," and they will regard the old familiar fields with a clearer and more critical vision.

The nation will be wise to recognise betimes that the change in the countryside betokens not only a demand for more wages or profits, for freer access to the land, or for greater efficiency in production. It implies a fuller appreciation of the human need for a less monotonous existence, for a life of wider scope and variety, for better opportunities of recreation, and reasonable facilities for social intercourse. The village club as a centre of

social activity must in future be as familiar as the village pump. The dullness and isolation of village life, which in the past have numbed the senses and stupefied the minds of the inhabitants, will no longer be patiently endured. Attempts to meet this need are being made in many villages throughout the country, and they can only be successfully made with the co-operation of all classes in the community. They cannot be made under any super-imposed plan ; they must, like farming, be adapted in each case to the local conditions. But herein lies the best means of maintaining and retaining on the countryside the intelligent and alert men and women who are essential to the attainment of a high standard of food production, and the best hope of fostering the spirit of contentment, brotherhood—

and gentleness,
In hearts at peace, under an English heaven.

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